



59th MEDICAL WING OFFICE OF THE CHIEF SCIENTIST SAN ANTONIO MILITARY MEDICAL RESEARCH COLLABORATIONS and CAPABILITIES GUIDE



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CHANGE SUMMARY

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| <ul style="list-style-type: none"> Added SWHPSG Fact Sheet | 9 Mar 2021 |
| <ul style="list-style-type: none"> Added DREAMLAND Fact Sheet Added DAsoc Fact Sheet Minor Admin changes | 12 Feb 2021 |
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Contents

| | |
|---|----|
| 59th Medical Wing | 8 |
| San Antonio Military Health System | 8 |
| DHA J9 Reseach & Development | 9 |
| 59 MDW Chief Scientist's Office | 10 |
| 59 MDW Office of Clinical Investigations and Research Support | 12 |
| Research Fundamentals Workshop | 15 |
| 59 MDW Center for Clinical Inquiry (C2I) (59MDW/STN) | 16 |
| Diagnostics and Therapeutics Research (59 MDW/STH), Joint Integrated Clinical Medicine (JICM) | 17 |
| 59 MDW Center for Advanced Molecular Detection (59MDW/ST CAMD) | 19 |
| 59 MDW Substance Abuse Program..... | 20 |
| Defense Adaptive System of Care (DASoC) | 23 |
| Trauma and Clinical Care Research (59 MDW/STT), Joint Austere Medicine (JAM) | 24 |
| Clinical Resuscitation, Emergency Science & Triage & Toxicology (59MDW/ST CREST ²). | 26 |
| En Route Care Research Center (59MDW/ST ECRC) | 27 |
| Frontline Illness, Exposure, & Recovery Care Efforts (59MDW/ST FIERCE) | 29 |
| Improvements in Neurological Sensory & Perceptible Research (59MDW/ST INSPR) | 30 |
| Surgical and Technological Alternatives for Traumatic Injuries in Combat (59MDW/ST STATIC) | 31 |
| Restorative Endeavor for Service members Through Optimization of Reconstruction (RESTOR). | 32 |
| Clinician Scientist Investigator Opportunity Network (CSION) | 33 |
| Defense Readiness Education and Material Laboratory for Austere-Care Nascent Delivery (DEAMLAND)..... | 34 |
| Office of Research & Technnology/Tech Transfer & Transition (59MDW ORTA/T3) | 35 |
| Regulatory (FDA) Assistance, Training & Consultation (59MDW/ST)..... | 37 |
| Air Force Dental Research and Consultation Service (DRCS) | 38 |
| Air Force Post Graduate Dental School and Clinic (AFPDS)..... | 40 |
| San Antonio Military Health System (SAMHS) | 41 |
| San Antonio Uniformed Services Health Education Consortium (SAUSHEC) | 44 |
| Adult Extracorporeal Life Support (ECLS) Program..... | 46 |
| Critical Care Air Transport Team (CCATT)..... | 48 |
| Joint Trauma System (JTS) | 49 |
| Diabetes Center of Excellence (DCOE) | 53 |
| Hearing Center of Excellence (HCE) | 55 |
| Joint Warfighter Refractive Surgery Center of Excellence | 56 |
| Hyperbaric Medicine | 58 |
| Tri-Services Research Laboratory (TSRL)..... | 59 |
| Brooke Army Medical Center (BAMC)..... | 60 |
| BAMC – Department of Clinical Investigation (DCI) | 61 |
| BAMC - Center for Nursing Science & Clinical Inquiry (CNSCI).. | 62 |
| BAMC – Zachary and Elizabeth M. Fisher Bone Marrow Transplant Program | 64 |
| USAISR Research Directorate | 65 |
| U.S. Army Institute of Surgical Research Burn Center..... | 67 |
| Battlefield Health and Trauma Research Institute | 69 |
| Center for the Intrepid | 71 |

| | |
|---|----|
| Naval Medical Research Unit (NAMRU) San Antonio | 75 |
| Medical Education and Training Campus (METC) | 77 |
| San Antonio Military Medical Research Leaders Consortium (SAMMRL)..... | 79 |
| Special Warfare Human Performance Support Group (SWHPSG) | 81 |
| South Texas Veterans Health Care System | 82 |
| Uniformed Services University of the Health Sciences - Southern Region Campus | 83 |
| Southwest Research Institute..... | 84 |
| Texas Biomedical Research Institute (Texas Biomed)..... | 85 |
| UT Health SA | 87 |
| The Military Health Institute | 88 |
| Strong Star and the Consortium to Alleviate PTSD | 89 |
| The University of Texas at San Antonio (UTSA) | 91 |
| San Antonio Military Health System (SAMHS) and Universities Research Forum (SURF) ... | 92 |
| Academic Network of Conversational Hip Outcomes Research (ANCHOR) | 93 |
| BioMed SA | 94 |
| San Antonio Economic Development Foundation (SAEDF)..... | 95 |
| San Antonio Economic Development Corporation | 96 |
| San Antonio Medical Foundation..... | 97 |
| Joint Base San Antonio Operation Warp Speed Phase III Clinical Trial | 98 |

Forward

This guide is a quick reference to the numerous specialized capabilities and collaborations involved in military medical research in and around the San Antonio, Texas, area. This is a living document that will be updated as new collaborators are identified. Additional information regarding the 59th Medical Wing, our office, research portfolio, education and training, and points of contact is provided at: <http://www.59mdw.af.mil/Home.aspx>; <http://www.59mdw.af.mil/Units/ChiefScientist-ST.aspx>; <https://kx.afms.mil/kj/kx8/59MDWScienceAndTechnology/Pages/home.aspx>.

Debra M. Niemeyer, Ph.D., DAF
Chief Scientist, 59th Medical Wing



59th Medical Wing

“Warrior Medics – Mission Ready –Patient Focused”

MISSION: Developing Warrior Medics through Patient-Centered Care

VISION: Exemplary Care, Global Response

Brooke Army Medical Center

MISSION: We protect the Nation by ensuring Total Force Readiness through innovative, high quality care and the development of elite healthcare professionals.

VISION: To be the pinnacle of military healthcare -- Anytime, Anywhere!

San Antonio Military Health System

MISSION: As an integrated system, the San Antonio Military Health System provides safe, accessible, high quality patient-centered care and promotes patient health, readiness, education & training, and research.

VISION: To be the DoD's premier System for Health Care Delivery and our patients' first choice for healthcare.

PERFORMANCE PLEDGE: The San Antonio Military Health System team promises to provide exemplary healthcare and promote a healthy community. We pledge to our beneficiaries and partners to provide a safe, high-quality, and positive experience that is patient-centered and family-supportive. As members of a strong inter-service team, we are committed to you and your health.

Defense Health Agency J-9 Research & Development

Mission

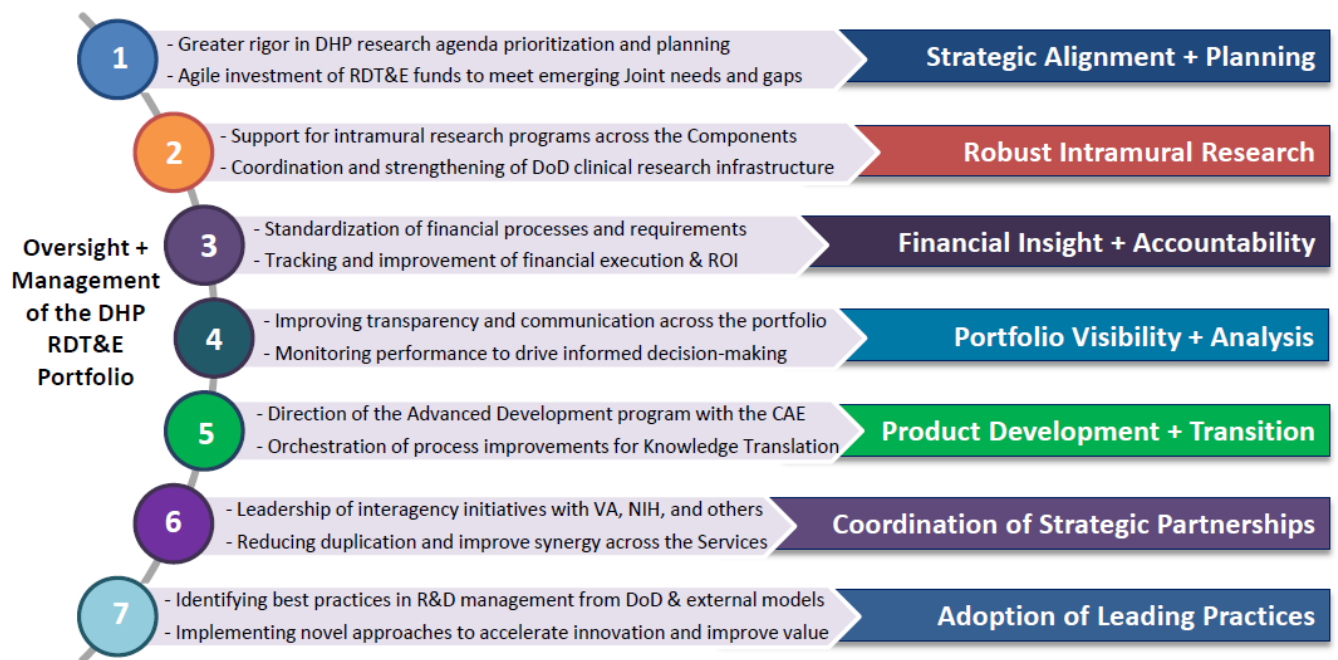
The mission of the Research, Development and Acquisition (RDA) Directorate is to lead the discovery, development, and delivery of enhanced pathways to military health and readiness.

Vision

The vision of the Research, Development, & Acquisition (RDA) Directorate is to bridge the future of military health and readiness.

Strategic Initiatives

Core Activities of RDA



<https://info.health.mil/rd/Pages/Home.aspx>,

FACT SHEET

59 MDW Chief Scientist's Office

Vision: *Grow Medical Leaders, Drive Innovations in Patient Care and Readiness*

Mission: *Conduct clinical studies and translational research and apply knowledge gained to enhance performance, protect the force, and advance medical care and capabilities across the global health system*

“Providing operational capability through Education, Training and Research”

The 59th Medical Wing Chief Scientist provides the strategic vision, direction, oversight, project management support and technical resources to advance medical modernization efforts with a unique focus on research activities. The research portfolio is requirements-driven to address unique military scientific needs in trauma critical care, clinical and rehabilitative medicine, diagnostics, therapeutics and medical modeling and simulation training. The goal is to advance DoD Joint capabilities and improve military health and readiness from the battlefield to the market-place interfacing with partners in the Services, academia, private sector, and other government agencies by transitioning scientific findings to the operational environment and patient bedside, to best practice.

The 59 MDW Chief Scientist's Office, Science and Technology (59MDW/ST) provides oversight and support to investigators assigned to the 59 MDW, the Brooke Army Medical Center (BAMC), San Antonio Military Health System (SAMHS), Joint Base San Antonio (JBSA) and affiliated organizations. Research is conducted at and in collaboration with the U.S. Army Institute for Surgical Research (USAISR)/Battlefield Health and Trauma Research Institute (BHT) (USAISR/BHT), JBSA-Fort Sam Houston, TX, the Navy Medical Research Unit-San Antonio, JBSA-Fort Sam Houston TX; and the 59 MDW/ST Clinical Investigations and Research Support division, Wilford Hall Ambulatory Surgical Center, JBSA-Lackland, TX.

Major 59MDW/ST Programs/Capabilities

- Clinical Investigations and Research Support (CIRS)
 - Clinical Investigations Program (Graduate Health Sciences Education), Readiness & Medical Skills Certification Training
 - Human Research Protection Program; Animal Care and Use Program (ACUP)
 - Clinical Investigation and ACUP support laboratory
- Nursing Research / Center of Clinical Inquiry
 - Chief Nurses consultation/24 MTFs; Research & Evidence Based Practice
- Joint Integrated Clinical Medicine / Center for Molecular Detection
 - Rapid Pathogen Detection/Analysis & Precision Medicine Research
 - Military Family Health and Resilience
 - Regenerative/Restorative Medicine
 - Disease, Injury and Pain Management
 - Trainee Health and Fitness/Readiness
- Joint Austere Medicine Research / Trauma and Clinical Care Research
 - Clinical Resuscitation, Emergency Science, & Toxicology Program (CREST²)

- En Route Care Research Center (ECRC)
- Front Line Illness, Exposure, & Recovery Care Efforts (FIERCE)
- Improvements in Neurological, Sensory, & Perceptible Research (INSPR)
- Surgical and Technological Advancements for Traumatic Injuries in Combat (STATIC)
- Office of Research & Technology/Technology Transfer & Transition (ORTA/T3)
 - Support medical research by facilitating collaboration and supporting the transfer and transition of medical technologies and knowledge to commercial and fielded capabilities
- Dental Education, Research and Consultation
 - USAF Post Graduate Dental School and Clinics, JBSA-Lackland
 - Dental Research and Consultation Service, JBSA-Fort Sam Houston

Collaborators include the 711th Human Performance Wing (711HPW) Wright Patterson AFB OH, JBSA - Fort Sam Houston TX and JBSA-Lackland TX; US Army Institute of Surgical Research (USAISR), the Navy Medical Research Unit-San Antonio (NAMRU-SA), Uniformed Services University (USU; Bethesda and JBSA-Fort Sam Houston Campuses), Medical Education and Training Campus (METC), Brooke Army Medical Center Department of Clinical Inquiry (BAMC DCI), amongst other federal and Department of Defense organizations.

Clinical Investigation Program (CIP) activities are part of the 59 MDW/ST portfolio and managed by Clinical Investigations and Research Support in support of Graduate Health and Science Education (GHSE) and Readiness Training.

Nursing research is aligned under ST with activities managed by the Center for Clinical Inquiry.

Dental research is also part of the wing portfolio, and directed by the Dean, Air Force Post-Graduate Dental School and Clinics, and the Commander, Dental Evaluation and Consultative Service located at the BHT, JBSA-Fort-Sam Houston, TX. In addition to the DHA partnership agreements already established with the University of Texas system, the 59MDW has executed robust educational partnership agreements with the University of Texas Health Science Center San Antonio and the University of Texas San Antonio that serve to enhance local collaborations.

Additionally, this office established the 59MDW Scientific Advisory Council and the San Antonio Military Medical Research Leaders (SAMMRL) consortium with our Service partners, and continues to strengthen collaboration with academia and industry partners; ST authored the charter for the SAMMRL consortium (in staffing). Furthermore, this office participates in various meetings and workgroups:

- Biomedical Community of Interest (Biomedical COI)
- San Antonio Military Medical Research Leaders Consortium (SAMMRL)
- Defense Health Agency Service Work Groups
- Air Force Chief Scientist's Group (AF/ST CSG)
- Joint Program Committees (JPCs)
- AFMS Capability Oversight and Oversight Group (CDOG)
- Air Mobility Command Surgeon General's Aeromedical Research Oversight Committee (AEROC)

For more information: email usaf.jbsa.59-mdw.mbx.59-mdw-st@mail.mil or visit <https://www.59mdw.af.mil/Units/Chief-Scientist-ST/>.

FACT SHEET

59 MDW Office of Clinical Investigations & Research Support (59MDW/STC)

The 59th MDW Office of Clinical Investigations and Research Support (CIRS, 59 MDW/STC), 59 MDW Chief Scientist's Office, is located at Wilford Hall Ambulatory Surgical Center, Joint Base San Antonio (JBSA) Lackland, TX. The CIRS is the largest and busiest Clinical Investigation Program (CIP), supporting more research and training than all other CIPs in the AFMS combined. The CIRS supports scholarly activity requirements for Graduate Health and Science Education (GHSE) programs, competency and operational training requirements for 59th Medical Wing and BAMC healthcare providers to develop the Military Health Service Force, as well as R&D-funded clinical investigations for the advancement of medical science and application to military and nonmilitary patient care. The CIRS provides centralized administrative, scientific and regulatory oversight and guidance to the 59 MDW and over 67 other Air Force, Army, and Navy institutions, universities and civilian research organizations in the development and performance of institutional, national and international biomedical research. Capabilities include consultation on protocol development and research design, biostatistics consultation, Institutional Review Board support and oversight, multi-discipline laboratory analysis, animal surgical services, veterinary care and IACUC support and oversight.

The CIRS supports many areas of clinical investigation with special concentrations in:

- Vascular Injury Management
- Medical Toxicology
- Emergency Medicine
- Regenerative Medicine
- Stem Cell Research
- Dental Post Graduate Studies
- Personalized Medicine (Genomics)

The CIRS also provides medical skills and readiness training in the following areas:

- General Surgical Skills
- Extracorporeal Membrane Oxygenation (ECMO) Training
- Pararescue Technique Training
- Emergency Skills Training
- Emergency War Surgery Course
- Oral Maxillofacial Training
- Endovascular Skills Training and Resuscitative Surgery (ESTARS)
- Urological Surgical Skills Training
- Plastic Surgical Microvascular Surgery Training
- Microsurgical Training for Ophthalmology Residents
- Da Vinci Surgical Robot Training

The 59MDW CIRS is divided into Three Branches:

The Support Branch ensures 59 MDW and other supported sites maintain all appropriate federal and DoD assurances to perform human research, appropriate inter-institutional agreement for collaborative research locally, nationally as well as internationally and assists visiting investigators with coverage by the 59MDW assurances, when appropriate. The Support Branch supports the Institutional Review Board (IRB) and Institutional Animal Care and Use Committee (IACUC) which provide IRB regulatory oversight, outreach, and training while ensuring regulatory compliance for all 59 MDW human research and research studies currently active in over 67 other institutions, including Air Force, Army, and Navy Medical Treatment Facilities (MTFs), universities and civilian research organizations. IACUC regulatory oversight ensures regulatory compliance for all animal studies conducted by the 59 MDW. The Support Branch also assists investigators with protocol development, approval of clinical investigations, biostatistics, and dissemination of findings.

The **Support Branch** manages over 450 studies conducted throughout the AFMS.

- 251 of the clinical investigation protocols were human and human exempt studies
- 42 animal clinical investigation and training protocols
- 156 Bench studies (lab studies, material testing, etc.)
- Residents served as Principal or Associate Investigators for the majority of these studies

59 MDW IRB has agreements in place to serve as Reviewing IRB for 67 other institutions, including Air Force, Army, and Navy MTFs, universities and civilian research organizations.

The **Operations Branch** provides comprehensive animal care, surgical support and animal pathology services:

- Three fully functioning operating suites, including microsurgical capability
- One animal hyperbaric/hypobaric chamber for clinical investigation such as altitude sickness, hyperbaric treatment of radiation injury, and wound healing
- Two Instron Materials Testers for various applications to determine fatigue, impact, and/or resistance of materials and tissues
- Radiology and imaging capabilities, including ultrasound, digital film, and fluoroscopy, Bioluminescence, Immunofluorescence, MRI, CT and micro CT
- 25,000 square foot vivarium which houses up to seven species of animals
- Approximately 31,000 square feet of paddock area for up to 250 animals
- Animal histopathology laboratory for preparing slides of collected samples for examination by a veterinary pathologist including gross and microscopic pathology analyses of tissues, lesions, bones, teeth, and metal prostheses.
- Da Vinci Robotic Surgery System- training program to certify surgeons to use the system in actual patient surgery
- Over \$21M in medical equipment available to support clinical investigations

The **Laboratory Branch** provides human and animal laboratory support in five major areas:

- **Chemistry and Toxicology** – Clinical Chemistry, Spectrometry, High Performance Liquid Chromatography, state-of-the-art Gas Chromatographic-Mass Spectrometric (GS-MS) and Liquid Chromatographic Mass Spectrometric (LC/MS/MS) instruments for the analysis of drugs, drug metabolites, hormones, enzyme inhibitors; identification of biomarkers for disease prediction, treatment monitoring, and other small molecular weight compounds
- **Hematology** – CBC, platelet, reticulocyte and differential, coagulation testing (clottable, chromogenic, and latex immunoassay), platelet function, and enzyme immunoassays
- **Molecular Biology** – Real-time polymerase chain reaction (PCR) and multiple sequencing techniques to include Pyrosequencing, Sanger sequencing and next generation sequencing for nucleic acid detection, typing, and gene expression, genotyping and snip analysis. Full Human Genome Sequencing for Exome, Transcriptome, Multiplex-Targeted, and Microbiome Studies
- **Cell Biology and Immunology** – Multicolor flow cytometry to quantify and measure specific cells, cell culture capability to include proliferation and viability studies, single and multiplex biomarker detection and quantification with enzyme-linked immunosorbent assay (ELISA), Blood Banking and Proteomics
- **Microbiology** – Aerobic and anaerobic culture for epidemiology, disinfectant, proteomic, and medical readiness studies, Microscopy to include General, Fluorescent and Scanning Electron Microscope with 3D Dimensional capability

Detailed information about the 59th Medical Wing Office of Clinical Investigations and Research Support can be found at the following URLs:

<https://kx.health.mil/kj/kx8/ClinicalResearchJBSALackland/Pages/home.aspx> (Knowledge Exchange)

<https://kx.health.mil/kj/kx8/59MDWScienceAndTechnology/Pages/home.aspx>

FACT SHEET

Research Fundamentals Workshop

The Research Fundamental Course is a 2-day training event hosted each Fall by the 59 MDW/ST to benefit San Antonio Uniformed Service Health Education Consortium Program Directors, Residents and Fellows; Graduate Dental Education Residents and Fellows; new investigators, research support personnel and advanced investigators in accomplishing research. This course provides a roadmap to research project development, approval and completion, and a networking forum to promote mentorship and collaboration. This workshop supports Association for the Accreditation of Human Research Protection Programs (AAHRPP) and AAALACi training objectives, and 59 MDW's commitment to education as a High Reliability Organization.

Objectives of the workshop include:

- Provide overviews of research resources available to meet Graduate Health Sciences Education and Graduate Dental Education scholarly activity requirements, to include the Clinical Investigations Program, funding, facilities, and support capabilities.
- Introduce regulatory fundamentals of human subjects and animal research, to include post-approval monitoring.
- Provide an overview of protocol submission processes, to include electronic systems.
- Educate on good research practice and techniques (e.g., developing a research question, literature search strategies, statistics, etc.).
- Review 59 MDW and Brooke Army Medical Center publication and presentation clearance processes.
- Provide information on advanced research topics, including, but not limited to, grant writing, programmatic R&D and alternative funding sources, technology transfer, and partnerships with academia and industry.
- Inform and educate on “big data” resources, and developing database research projects.

Speakers represent a spectrum of expertise and organizations, to include 59 Medical Wing, SAUSHEC, and the Defense Health Agency. Learning is conducted through the use of formal briefings and small-group breakout sessions, during which attendees are encouraged to discuss nascent research ideas with experts in human subjects, animal, dental, nursing, and database research.

For more information, contact Ms. Rachel Montez at 210-292-4683 or email:

Rachel.a.montez.civ@mail.mil.

FACT SHEET

59 MDW Center for Clinical Inquiry (C2I) (59MDW/STN)

The 59 MDW C2I, 59MDW Chief Scientist's Office, is one of four innovative Air Force nursing research cells dedicated to the conduct of research, promotion of interdisciplinary clinical inquiry and the translation of research in support of Trusted Care. Doctoral prepared active duty Nurse Scientists, and Evidence-Based Practice (EBP) Leaders conduct research to advance military and clinically relevant science and the translation of evidence into practice. Research performed by these nurse scientists is mapped into the Wing's research portfolio based on alignment to address military relevant capability gaps. C2I staff play a key role in the education and mentoring of 59 MDW nurses and technicians in clinical inquiry activities.

MISSION: Ensure Innovative Military Readiness and Healthcare

VISION: A culture of inquiry: mission focused...excellence driven...trusted care anywhere

RESEARCH and EBP areas: Evidence generation, translation, and implementation to optimize clinical practice, patient outcomes, population health and education and training across the San Antonio Military Health System (SAMHS).

Clinical research studies and EBP initiatives are currently being conducted in the following areas:

- Identifying the Core Content of Military Identity for Psychological Understanding
Precision Nutrition
- Women's Health - Mentors Offering Maternal Support (MOMSTM): A Prenatal Program
Building Maternal Self-Esteem, Coping, and Resilience and Decreasing Depression
- Population health: Evidence Based Practice
- Psychological Resilience; Positive emotions
- USAF Basic Military Trainees, Stress Fractures and the Effects of Athletic trainers on Career trajectory and healthcare utilization
- Tai Chi: An Evidence-Based Intervention for lower back pain for Low Back Pain
- Nurse retention - Advanced Practice Nurse transition to provider role
- Surveillance of military nurse outcomes during corporate restructuring

SCOPE AND COLLABORATIONS:

- All nursing research protocols and projects reviewed by 59MDW Institutional Review Board (IRB) conducted in congruence with AF/DoD guidance, Federal mandates/laws.
- The C2I is currently engaged in 10 IRB approved research protocols.
- Collaborative Institutions include: University of Texas Health Center at San Antonio; University of New Mexico; University of Texas at Austin; University of Incarnate Word; Tri-Service Nursing Research Program; Uniformed Services University of the Health Sciences; Brigham and Women's Hospital, Harvard Medical School; Wright State University; Nursing Research and Women's Health Department, Joint Base Ft. Lewis McChord, Washington; and Women's Health Department, Balboa Naval Medical Center, San Diego, California.

FACT SHEET

Diagnostics and Therapeutics Research Program (59 MDW/STH) Joint Integrated Clinical Medicine (JICM)

JICM research efforts conducted by the 59MDW Chief Scientist's Office, Science and Technology, Diagnostics and Therapeutics Research Program (59 MDW/STH), enables our researchers to develop, evaluate, and integrate discoveries that translate into requirements-driven solutions including improved clinical practice guidelines and technology solutions for the warfighter. Our model employs the use of talented active-duty military clinical researchers, many with deployment experience, to lead research efforts while simultaneously engaged in Defense Health Agency (DHA)/Military Health System (MHS) patient care mission activity. Synchronized with meeting emerging needs of the military service member and their family members, diagnostics, therapeutics and 'omics (D&T) ensures that its medical research and development efforts link to readiness, Joint requirements, and relevance to those eligible for care through the MHS. The scope of D&T research encompasses priorities from the combat theater of operations to CONUS-based definitive care (Role 3-5) and significantly benefits from the local active duty trainee units, abundant patient population and specialized medical capabilities of the San Antonio Military Health System (SAMHS).

Considering the future operating environment, the mission of D&T is to promote innovative and impactful research for the prevention, diagnosis and treatment of disease and injury. The vision is to conduct patient-centered medical research and education of military healthcare leaders that delivers the best healthcare for uniformed service members and their beneficiaries.

D&T research portfolios are deliberately aligned within four DOD research focus areas including: Disease, Injury & Pain Management; Military Family Health & Resilience; Restorative Endeavor for Service members Through Optimization of Reconstruction (RESTOR); and Training/Trainee Health. Examples of programmatic research within D&T portfolios include precision-based medicine such as the development of novel diagnostic tests and biomarker discovery for advanced/precision treatment options for force health protection, and improving warfighter fitness by investigating risks and protective factors associated with psychological health and resilience. Therapeutic research to address injuries and disease includes enhanced preservation of tissue for surgical reconstruction, improve healing in wound injuries, improve repair of battlefield injuries by increasing the probability of successful rehabilitation, identify therapeutics for injury, disease and pain management, and developing interventions for substance abuse. With respect to infectious disease, examples of research projects include developing, evaluating and comparing early diagnostic detection platforms for pathogens affecting the DoD such as COVID-19, as well as surveillance of pathogens in DoD service members, beneficiaries and the environment. Moreover, D&T develops tools to ensure a healthy trainee population.

Education serves as a concrete foundation to cultivate future DoD research clinician leaders and drive innovation through new minds looking at existing gaps and developing solutions. Thus, D&T also develops educational programs for training military medical leaders to improve patient outcomes and reduce costs in the MHS. An example of education tools to develop future clinician research leaders, Research Education Academy (REA) was established with the goal of providing research education

opportunities at all levels to develop future research clinician leaders. This goal is accomplished by offering physician residents, fellows and staff mentorship research opportunities and courses on grant writing, study design and project management. Overall, participation in the REA will enable emerging clinicians to become successful research clinicians who not only can provide patient care to DoD service members and their beneficiaries, but who can also develop and drive the solutions to further improve patient care, survival and quality of life by addressing DoD medical gaps and requirements.

FACT SHEET

59 MDW Center for Advanced Molecular Detection (59MDW/STH CAMD)

MISSION: As part of the 59MDW Chief Scientist's Office, , the overall mission of CAMD is to support the military's biomedical research that focuses research, development, and evaluation of innovative bioengineering integrative approaches and principles that advance precision, regenerative, and diagnostic medicine for improving clinical outcomes for the warfighter.

STRATEGY: The CAMD have two primary program areas: The **Clinical Molecular Research and Support (CMRS) Program** provides long-term pathogen surveillance to assess the epidemiological trends of infectious disease in the military community. Furthermore, CMRS conducts research, development, test and evaluation of advanced genetic, proteomic, and molecular analysis of human and animal samples to improve the diagnostic value of current and future precision medicine efforts. The **Advanced Engineering Research and Development (AERD) Program** serves to drive innovation, both knowledge and physical product, by supporting both internal and external collaborators in translating technology into clinical practice. Specifically, research is focused on the direct integration of engineering principles with advanced precision medicine approach.

Expertise:

- Molecular precision medicine development and analytics.
- Development of Advanced *in vitro* cellular and tissue models for precision medicine research of military-focused disease and injuries.
- High-throughput genomic research and analytics through the application of bioinformatics and advanced sequencing approaches.
- Application of bioengineering approach for the development of novel tools for *in vitro* and *in vivo* research.
- Research level sample repository for clinical samples for both internal and external research efforts.

Active Collaborations:

- Brooke Army Medical Center (BAMC), San Antonio, TX
- Naval Medical Research Unit San Antonio (NAMRU-SA), San Antonio, TX
- University of Texas at San Antonio, San Antonio, TX
- UT Health San Antonio, San Antonio, TX
- The University of the Incarnate Word, San Antonio, TX
- Michigan State University, East Lansing, MI
- Uniformed Services University - 4D Bio³ Program, Bethesda, MD

Summary:

- CAMD is the only DHA research center that conducts surveillance of military-relevant pathogens within a large population of military personnel and their dependents.
- CAMD researches, develops, and evaluates novel diagnostic and analytical approaches for transition into the field.
- CAMD conducts biomedical and bioengineering research that focuses on research areas of precision medicine, diagnostics, and regenerative medicine.

FACT SHEET

59 MDW Substance Abuse Research Program

MISSION: Provide background for JPC5 on research activities for San Antonio Military Substance Abuse Research Team (SAMSART), to include basic science research, sophisticated surveillance research using medical databases, and treatments in a multicenter approach with a goal of reducing substance abuse among military members by obtaining program funding to support uninterrupted research protocols.

BACKGROUND: The Department of Defense (DoD) Office of the Army Surgeon General Pain Management Task Force (May 2010) and the Chairman of the Joint Chiefs of Staff, Admiral Mullen's report "Systems Approach to Drug Demand Reduction in the Force" support the need to better understand opioid abuse and reduce the abuse.

- 2009 DoD Health Related Behaviors Survey lists prescription opioid as the most common drug abuse, above illicit drugs. Among active duty personnel, 15% misused a prescription drug in the past month and 26% in the past 12 months – Our recent data from Texas military bases confirms this behavior with increasing abuse over the last 4 years.
- The White House 2010 National Drug Control Strategy that specifically calls out opioid abuse in the military as a national priority for which further resources must be allocated (2010 Office of National Drug Control Policy).
- Additional research is needed from an experienced joint military/civilian research group to 1) better understand opioid abuse; 2) validate treatments; and 3) understand the psychosocial factors facilitating the growth of substance abuse.
- In October 2017, a White House Memorandum on Combating the National Drug Demand and Opioid Crisis was issued. The current Working Group is looking to support further research in addressing the Opioid Crisis.

The Chief Scientist's Office, Science and Technology FY17 Policy Budget Memorandum and the Deputy Assistant Secretary of Defense, in a Memorandum to the Director of Defense Health Program (DHP), both support the National Research Action Plan for Improving Access to Mental Health Services for Veterans, Service Members, and Military Families to identify and develop effective diagnostic and treatment methodologies, and metrics with the aim of improved mental health and reduction in substance-use disorders.

DISCUSSION: San Antonio has a unique, experienced team of military (Army and Air Force, BAMC; civilian investigators (University of Texas Health San Antonio (UTHSA) and University of Texas San Antonio (UTSA), who conduct substance abuse research and have a large collaborative group of civilian, military and combat wounded patients to study.

- A UTHSA team member is the site PI for the National Institutes of Drug Abuse (NIDA), National Drug Abuse Treatment Clinical Trials Network (CTN), interested in fostering military collaborations. UTHSA team members have experience in using electronic medical records to manage chronic opioids use, pain/abuse and screening for markers of substance abuse.
- The UTSA Vice President for Research is interested in deepening military collaborations, tapping their expertise in many areas such as neurosciences, immunology, genomics and proteomics, and

- computational biology.
- BAMC Military team members have experience and a funding record in proteomics, clinical biomarkers, suicide with overdose, pharmacokinetic and pharmacodynamics of abused prescription drugs, chronic pain and detecting concomitant opioid use, and detecting prescription drug (stimulant and opioid) abuse with novel saliva and urine testing.
 - SAMSART consists of a military 59th MDW basic science toxicologist with laboratory support; an Army Warrior Resiliency Program scientist; the BAMC Chief of Medical Toxicology; the BAMC Chief of Pain Medicine; a 59th MDW senior epidemiologist; UTHSA NIDA supported psychologists, health services researchers, and basic scientists at UTSA.
 - The SAMSART Steering Committee is comprised of USAF Scientific Advisor to the USAF Surgeon General and the 59th MDW Chief Scientist, Director of Diagnostics and Therapeutics Research, a Senior Analytical Toxicologist, UTHSA Director of Health Outcomes Research, a STRONG STAR Director, and other regional experts in research, opioid use and substance abuse.
 - Toxicological analytical and pharmacokinetic work is being performed at the 59th MDW, genomic work at UTHSA, proteomic work at Pacific Northwest National Laboratories (Department of Energy), and genomics/proteomics and computational biology at UTSA.
 - Patient population will be combined from three hospitals, pharmacy databases from UTHSA and BAMC; and DoD health records (at Fort Sam Houston) are in proximity and available for use.
 - Currently, there are 10 Substance Abuse projects funded (\$4.6M), with intramural partners collaborating with joint service members and the following extramural partners:
 - UTHSA – 5 funded projects
 - Penn State – 1 funded project
 - Harbor University of California at Los Angeles – 1 funded project
 - University of Colorado at Denver – 3 funded projects
 - Current Studies:
 - Military survey studies to quantify prescription drug abuse on military bases and in the adjacent communities.
 - Use of Poison Center Drug Identification Exchanges as a marker of military substance abuse.
 - Detection of prescription stimulant use with saliva matrixes
 - Evaluation of urine drug testing for opioid abuse in primary care and pain clinics
 - Prescription monitoring project in military medical facilities
 - Clinical trial of novel oral analgesic to reduce opioid dependency
 - Evaluating psychological predictors as a determinant of opioid misuse in chronic low back pain
 - Evaluating the neurodevelopmental consequences from cannabinoid exposure in juvenile mice and novel treatment with human adipose-derived mesenchymal stem cells. Primary care redesign to support effective management of chronic pain with opioid and reduce opioid abuse.
 - Within the NIDA CTN, studies to determine whether use of sub-dissociative dose ketamine can improve pain control in patients with chronic pain syndrome presenting to the emergency department with an exacerbation of chronic pain.
 - Proposed/In Development Studies:
 - Develop a novel decision aid to assist military and civilian ED patients in understanding the risks, benefits, and value trade-offs regarding the decision to initiate opioids for an acute

painful condition.

- Determine the epidemiology and ethnography of synthetic cannabinoid abuse in military communities and develop educational materials for military substance abuse providers.

Summary:

- 59 MDW/CC and BAMC CG supports substance abuse research
- SAWG began in 2013 with the selection of members, write up of the Task Area Plan and funding of 5 FY14 studies. The 2008 and 2011 DOD Health-Related Behaviors Survey revealed that the most commonly abused drugs are the prescription pain relievers (opioids).
- With receipt of funds and Institutional Review Board approval, hiring of staff and equipment purchases, in support of the Substance Abuse program has begun. The program allows research protocols to be completed without interruption. Resources for additional funding will be monitored and proposals will be submitted to conduct follow on studies. The proposed studies are clinical trial work, minimal risk studies, retrospective studies, and database analysis are low risk and involve consenting subjects for retrospective review as well as monitoring bio-fluids and evaluating proteomic change.
- The current and ongoing studies are designed to deliver early assessment, interventions and treatment tools for substance abuse and common mental health issues (e.g., anger, risky behaviors, grief, guilt, cognitive difficulties). This includes studies whose deliverables are:
 - Medications to reduce substance misuse relapse or to reverse drug intoxication
 - Evidence-based practice recommendations for behavioral and pharmaceutical approaches for intervention, prevention and treatment
 - Evidence-based recommendations for reintegration and follow-up care strategies
 - Point-of-care testing for early detection that aids in facilitating treatment strategies
- The overall goal of the Substance Abuse working group is to deliver evidence-based assessment, prevention, and treatment interventions and tools that mitigate substance abuse, including, but not limited to, prescription drug misuse and alcohol and other drug abuse.

FACT SHEET

Defense Adaptive System of Care (DASoC)

The Defense Adaptive System of Care (DASoC) is a **combat support, enterprise-wide** solution to rapidly and continuously iterate and optimize Military Health System (MHS) wide management for directed energy (DE) and novel injuries. The DASoC concept has been briefed and validated at DHA HQ (DHHQ) by LTG Place, RADM Riggs, and Maj Gen Payne; and on 16 December 2020 Mr. John Teyhen (Deputy Assistant Director of Combat Support) approved DASoC for Phase 3 (Acquisition Strategy) via the MHS Portal Submission process.

Directed energy (DE) is a key technology needed to fight and win future wars. Given the broad range of existing and potential DE systems – novel and unpredicted injury patterns from exposure should be anticipated. The DHA does not have an existing system ready to manage novel DE injuries – which is an intrinsic threat to readiness. The lack of established rationale CONOPs / SOPs for DE or novel injuries has the risk of yielding: poor care – secondary to incomplete evaluations; poor health – secondary to undiagnosed or unmanaged injuries; and redundant and expensive overutilization of medical resources. In order to improve readiness, health, and care within the DHA while being able to rapidly reduce costs of managing new injury patterns, the DHA needs an adaptive system of care, in place **now**, to manage the **future** known and unknown injury patterns from directed energy or other novel threats.

This proposed adaptive system of care will have the following critical components:

- i.) Unified data structures for enterprise-wide, secure, registry of data (exposure, clinical, research, and longitudinal health) which allows for decentralized contribution of data and analysis of data while maintaining operational security.
- ii.) Mechanism to define rational CONOPs / SOPs for the management of known and suspected DE exposures (or other novel injuries) via collaboration between bioeffects experts and combat casualty care providers.
- iii.) Mechanism to rapidly iterate to optimized CONOPs / SOPs for novel injuries via multidisciplinary clinical evaluations with close support by DoD and civilian medical and clinical research teams.
- iv.) Mechanism to disseminate optimized CONOPs / SOPs real-time via integration into existing military medical training and existing DHA information technologies.

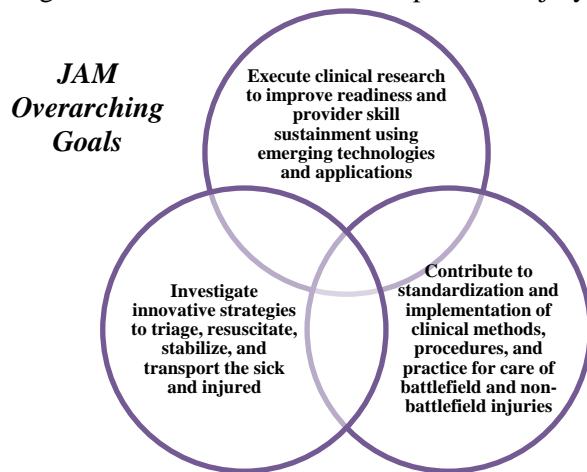
To accomplish the management of DE and assemble the necessary components to do so, the DASoC proposes to collaborate with stakeholders across the enterprise, to include: DHA Director's Innovation Group (DIG), DHA J5 (Strategy, Plans, and Functional Integration), DHA J6 (Information Operations), 59 Medical Wing, US Army Institute of Surgical Research, Naval Medical Research Unit San Antonio, US Army Medical Center of Excellence, San Antonio Uniformed Service Health Education Consortium (SAUSHEC), 711 Human Performance Wing, Virtual Medical Center, Brooke Army Medical Center, Wilford Hall Ambulatory Surgical Center - the major MTFs of the San Antonio Military Health System (SAMHS), Joint Trauma Service (JTS), Joint Trauma Analysis and Prevention of Injury in Combat (JTAPIC), 4DBio3, and National Intrepid Center of Excellence.

FACT SHEET

Trauma and Clinical Care Research Program (59 MDW/STT) Joint Austere Medicine (JAM)

The 59MDW Chief Scientist's Office, Science and Technology (59MDW/ST) is committed to conducting clinical and translational research by applying knowledge gained to enhance performance, protect the force, and advance medical care and capabilities across the global health system. As an organization focused on the future battlespace with an ever-present need to maintain medical readiness, the 59MDW/ST created the Joint Austere Medicine (JAM) task area.

The **mission** for JAM is to conduct translational and clinical research to protect the force, and improve patient care and return to duty rates in austere environments (Roles 1-3). JAM's **vision** is to conduct **clinical research** to support austere missions by **enabling access to technologies** and **acquiring new knowledge** that will empower medical personnel in providing superior patient care that improves the human condition throughout the continuum~ from the point-of-injury, en route, and the CONUS-based hospital environment.



The JAM Directorate is purposefully aligned with six of the Defense Medical Research Program Portfolios: 1) Prolonged Care; 2) Battlefield Resuscitation; 3) En Route Care; 4) Neurotrauma and Traumatic Brain Injury; 5) Medical Treatment for Acute and Long Term Recovery; and 6) Diagnosis by Using Biophysical Dosimetry Methods and Devices. These programs provide clinicians and other health care professionals with access to knowledge and materiel solutions as well as mechanisms for implementation to ensure the best patient care in expeditionary environments.

Each of these portfolios have been sub-divided into five unique **clinical programmatic efforts** representing key areas of patient care addressing non-battlefield communicable illnesses and traumatic injuries occurring in expeditionary environments and the training and education needs necessary to ensure combat medic readiness. These include:



Moreover, as part of the 59th MDW Chief Scientist's Office vision of "Growing Medical Leaders," JAM conducts research and supports a myriad of expanded live tissue/simulation and training opportunities for improvement of combat medic skills not frequently used by clinicians to build and sustain their knowledge base. To expand on such opportunities, JAM has recently developed and supported, in collaboration with joint leaders across JBSC, the Clinician Scientist Investigator Opportunity Network (CSION) where researchers contribute to the development and evaluation of products and dissemination of rigorous evidence that provide

practical solutions for the combat medic across a variety of topics. Sponsored by the Chief Scientist, the purpose of CSION is to develop active duty clinicians (service-agnostic) who have a passion/talent for synthesizing promising discovery into practical application without additional service obligation. CSION's vision is to mentor gifted clinician-scientists to improve the United States Department of Defense military capability as it relates to the warfighter's physiology.

FACT SHEET

Clinical Resuscitation, Emergency Science, Triage & Toxicology (CREST²)

MISSION: Provide advanced triage and resuscitation to trauma and medical casualties in resource limited environments.

BACKGROUND:

- The early foundation program for the 59MDW Chief Scientist's Office CREST was established in late 2010 with its first full-time director assigned in 2011. As the program was integrated into the Joint Austere Medicine Research Program, an additional Toxicology capability was added to the program in 2019.
- CREST² is co-located at the 59 MDW/ST office at JBSA-Lackland, TX and the Combat Casualty Care Center with the Joint Battlefield Health and Trauma (BHT) Institute at Ft. Sam Houston, TX.
- Focused research efforts for CREST² encompasses research, interpretation, and implementation, of 1) Newest clinical practices to improve mass casualty response and evacuation; 2) Advanced medical response and evacuation team coordination, unmanned casualty evacuation, and remote telemedicine; 3) Wearable and implantable biosensors care of injuries and; 4) Research related to envenomation, toxins and biologics.
- CREST² capabilities center in extracorporeal life support training techniques and course development, large animal models of hemorrhage and resuscitation, therapeutic evaluation and fluid requirements, medical toxicology and antidote evaluation.
- CREST² educational opportunities encompass live tissue and simulation activities that identify and remediate gaps in medics' clinical performance.
- All CREST² human and animal research protocols are managed thru the oversight of the U.S. Army Institute of Surgical Research (USAISR), Brooke Army Medical Center (BAMC) and 59 MDW/ST Institutional Review Board and Institutional Animal Care and Use Committees.
- In FY2019, there were 13 ongoing human and animal research studies covering a variety of research areas to include hemorrhage and resuscitation, therapeutic evaluation and fluid requirements, and medical toxicology to name a few.
- In FY2019, over 50 publications and presentations to National and International audiences.

FACT SHEET

En Route Care Research Center (ECRC)

MISSION: As part of the 59 MDW Chief Scientist's Office, the En Route Care Research Center provides comprehensive, far forward research in order to enhance patient stabilization, preparation for movement, staging, and in-flight/in-transit care. End state is focused research conducted that will advance knowledge and treatment of injury and disease.

VISION: The vision of this program is two-fold.

- Facilitate research and solution development for patient movement capability gaps from point of injury to point of final definitive care, that is, across the continuum of care.
- Provide a solid foundation for the 59 MDW ECRC Concepts of Operations at the United States Army Institute of Surgical Research within the Joint Center of Excellence for Battlefield Health and Trauma.

BACKGROUND:

- ECRC Charter established Sept 2011, and first full-time director assigned Jul 2013
- The ECRC is part of the Air Force Combat Casualty Care Center with the Joint Battlefield Health and Trauma (BHT) Institute located at Ft. Sam Houston, TX
- The ECRC care continuum encompasses a broad spectrum of transport environments including both rotary and fixed wing patient moves serving as the focal point for studying clinical knowledge gaps related to en route continuum of care to include Medical Evacuation (MEDEVAC), Aeromedical Evacuation (AE), Critical Care Air Transport Team (CCATT), and Burn Flight Team (BFT).
- All En Route Care human and animal research protocols are managed thru the oversight of the U.S. Army Institute of Surgical Research (USAISR), Brooke Army Medical Center (BAMC) and 59 MDW/ST Institutional Review Board and Institutional Animal Care and Use Committees.
- In Fiscal Year (FY) 2019 alone, 22 human and animal research protocols were conducted in areas including, but not limited to, spinal fractures, blood transfusion, sepsis, burn, acute and chronic pain, traumatic brain injury, lifesaving interventions, and hemorrhagic shock.
- Multiple Joint Collaborations with USAISR Burn Center, Critical Care Monitoring Task Area, Tactical Combat Casualty Care Task Area, USAISR Pain Task Area, Joint Trauma Center of Excellence, USAF Critical Care Air Transport Team (CATT) Pilot Unit, and BAMC Department of Emergency Medicine.
- Future research areas include ECRC Health Care Outcomes: Evidence based care for TCCET/MERT/CCATT/TACEVAC/MEDEVAC, Hospital-based Clinical Trials: Resuscitation devices, ultrasound, and analgesia. Preclinical Studies: Pre-hospital resuscitation, serum markers for hemorrhage shock, and devices for improved monitoring, documentation, decision support.
- Additionally, mentorship of residents/fellow from AF and Joint Services have provided support as Associate Investigator's on several research protocols. ECRC educational opportunities encompass live tissue and simulation activities that identify and remediate gaps in medics' clinical performance.

- Numerous papers published to nationally recognized medical journals; and hundreds of oral and posters presentations to national and International audiences since its establishment.

FACT SHEET

Frontline Illness, Exposure, & Recovery Care Efforts (FIERCE)

MISSION: Improve early detection methods, treatment, and recovery from communicable illness, and non-battlefield injuries to improve return to duty turnaround times.

BACKGROUND:

- The foundation program for 59MDW Chief Scientist's Office FIERCE was established in late 2019 with its first full-time medical director assigned in 2019, as part of the Trauma Clinical Care Research Program (TCCR).
- FIERCE is co-located at the 59 MDW/ST office at JBSA-Lackland, TX and the Combat Casualty Care Center with the Joint Battlefield Health and Trauma (BHT) Institute at Ft. Sam Houston, TX.
- Robust research on decontamination practices and methods in austere environments; research conducted at Camp Bramble, JBSA-Lackland and in collaboration with CAMD.
- Clinical research efforts at Brooke Army Medical Center, JBSA-Ft. Sam Houston.
- FIERCE research focuses on 1) Coordination and uniformity for clinical field diagnosis and treatment of communicable/infectious illness as a measure of force health protection, decon and disinfectant measures & hygiene; austere respiratory disease; austere dietary GI issues and dehydration detection and management; 2) Vector-borne diseases; 3) Non-battlefield injuries; 4) Pain suppression/regulation and; 4) Management of dermatologic, immunologic, psychological, genitourinary, MSK/Orthopedic emergencies, soft tissue injuries occurring in the austere, combat environment.
- FIERCE capabilities center in novel emergency skills training and sustainment that encompass live tissue and simulation activities that identify and remediate gaps in medics' clinical performance.
- FIERCE researchers lead efforts in advanced sensor development, value-based care research, machine learning and artificial intelligence, autonomous medical support, and participation in FIERCE research focused multicenter clinical trials.
- All FIERCE human and animal research protocols are managed thru the oversight of the U.S. Army Institute of Surgical Research (USAISR), Brooke Army Medical Center (BAMC) and 59 MDW Institutional Review Board and Institutional Animal Care and Use Committees.

FACT SHEET

Improvements in Neurological, Sensory, & Perceptible Research (INSPR)

MISSION: Improve methods and enhance clinical skills for identification, diagnosis, and treatment of trauma involving head, neck, and spine injuries, and neurological and sensory injuries as a result of force or directed energy.

BACKGROUND:

- The foundation program for the 59MDW Chief Scientist's Office INSPR was established in late 2019 with its first full-time medical director assigned in 2019, as part of the Trauma Clinical Care Research Program (TCCR).
- INSPR is co-located at the 59th MDW/ST and the Center for Hearing Excellence at JBSA- Lackland, TX, the Tri-Service Research Lab and the Air Force Combat Casualty Care Center with the Joint Battlefield Health and Trauma (BHT) Institute at Ft. Sam Houston, TX.
- INSPR research focuses on 1) Clinician skill sustainment, clinical training and methods to identify and diagnose and mitigate acute effects of Head/Neck/Spine; 2) Multi-sensory effects of mTBI/TBI from shock waves, directed energy, MVA, or blunt force insults; hearing loss; vertigo; and 3) Clinical use of identified biomarkers for prognosis of head, neck, and spine injuries as well as neurological and sensory injuries as a result of force or directed energy.
- INSPR capabilities center in large and small directed energy and blast injury animal models, targeted therapeutic, monitoring/diagnostic strategies for austere injury treatment, and development/improvement of telemedicine, telemonitoring, and telementoring for INSPR- related research focus areas.
- INSPR actively participates in research related to the Defense Adaptive System of Care (DASoC) effort.
- INSPR's unique educational opportunities encompass live tissue and simulation activities that identify and remediate gaps in medics' clinical performance when caring for austere traumas involving head, neck, and spine injuries, and neurological and sensory injuries as a result of force or directed energy.
- All INSPR human and animal research protocols are managed thru the oversight of the U.S. Army Institute of Surgical Research (USAISR), Brooke Army Medical Center (BAMC) and 59MDW Institutional Review Board and Institutional Animal Care and Use Committees.

FACT SHEET

Surgical and Technological Advancements for Traumatic Injuries in Combat (STATIC)

MISSION: The **mission** of the 59 MDW Chief Scientist's Office Surgical and Technological Alternatives for Traumatic Injuries in Combat (STATIC) is to research and develop smart, cyber, and autonomous strategies for therapeutic and technological interventions for patients experiencing pain, cardiopulmonary, and multi-organ failure and to study, develop, demonstrate, and translate material and non-material solutions that address gaps in acute surgical interventional management to achieve improvements in mortality, limb salvage, functionality, and quality of life for traumatically-injured patients.

BACKGROUND: The STATIC program leads research in a variety of techniques and technologies that span across the preclinical and clinical environments to address specific needs related to trauma in an austere environment. Researchers investigate and help to translate effective strategies and means to expeditiously manage combat-inflicted injuries and maintain homeostasis, thereby limiting cellular damage and additional complications. Within this research area, there are numerous gaps in injury research models and military capabilities for effective intervention in areas such as vascular trauma. Wartime injuries and disruption of blood flow resulting in ischemia represents the leading pattern of injury on the battlefield. The STATIC team focuses on:

- Modulation of dysregulated immune response triggered by trauma
- Evaluation of multiple molecular therapeutic targets that can increase survivability, decrease resuscitation fluid requirements, reduce coagulopathy, dampen inflammation, and exert protective effects against ischemia/reperfusion-mediated tissue damage
- Evaluation and application of novel life-saving surgical techniques that improve the outcomes following treatment during the prolonged care
- Use of portable and ruggedized technologies to optimize critical care in theatre, during transport, and in austere conditions
- Development of live tissue and simulation training and competency validation for combat casualty care medics in various settings to include austere training sites.

STATIC KEY RESEARCH AREAS:

- Larger and small polytrauma live tissue models
- Immunomodulation of trauma
- Extracorporeal Life Support (ECLS), endovascular devices including trauma-specific vascular shunts for diagnosis and repair of major vascular injury, and resuscitative procedures, fluids, and blood products for patients with complex injuries including TBI
- Virtual reality in far forward environment to supplement pain management measures
- Test and evaluation of electronic patient record management tools, assessment of telementoring capabilities and autonomous medical support systems
- Novel adjuncts for damage control surgery, wound treatment and prevention, infection control, and sepsis management.

FACT SHEET

Restorative Endeavor for Service members Through Optimization of Reconstruction (RESTOR)

MISSION: Advance the science of Vascularized Composite Allotransplantation (VCA), immunomodulation, and Regenerative Medicine to optimize reconstructive potential for injured service members; the program is aligned in the 59 MDW Chief Scientist's Office Portfolio.

VISION: Provide optimal anatomic and functional reconstructive outcomes for previously non-reconstructable complex battlefield injuries

KEY RESEARCH AREAS:

- Vascularized Composite Allo- and auto-transplant (VCA) research developing translational models for reconstructive transplantation.
- Donor Tissue Specific Immunomodulation research to obviate the need for chronic toxic immunosuppression in service members who are candidates for VCA.
- Clinical Vascularized Composite Allo- and auto- transplantation reconstructing and re-functionalizing service members with upper extremity amputations through Auto- and Allo-transplantation.
- Regenerative Medicine combining biologic scaffolds, adult stem cells and growth factors to produce high quality composite replacement tissues, improve range of motion, scar compliance, and aesthetics while improving scar quality through safe and effective modalities.

Scope and Collaborations:

- All RESTOR™ animal research protocols are managed through the oversight of the 711 HPW/RHD (TSRL) and 59 CRD Institutional Animal Care and Use Committees (IACUC).
- The RESTOR™ Program is currently engaged in 12 IACUC approved animal protocols.
- Collaborative Institutions: Naval Medical Research Unit San Antonio, US Army Institute of Surgical Research, USAF 59MDW/ST, UK Ministry of Defense, UK National Health Service, Gulhane Military Medical Academy (Turkish Armed Forces), Institute for Stem Cell Biology and Regenerative Medicine (India), University of Pittsburgh, Brigham and Women's, Harvard University, McGowan Institute of Regenerative Medicine, University of Texas Health Center at San Antonio, University of Alabama-Birmingham, Southwest Research Institute, Carmell Therapeutics, Faraday Pharmaceuticals, Eckert Technologies Group, University of Texas at San Antonio, Harvard Medical School, RegenMed SA, the Geneva Foundation and Fred Hutchinson Cancer Center.

FACT SHEET

Clinician Scientist Investigator Opportunity Network (CSION)

Mission: Develop active duty clinicians who have a passion/talent for synthesizing promising discovery into practical application

Vision: Mentor gifted clinician-scientists to improve the United States Department of Defense military capability as it relates to the warfighter's physiology

Background: In 2018, a team of joint Army/Air Force clinicians and scientists approached the 59MDW Chief Scientist's Office, Science and Technology to support a newly envisioned program, the Clinician Scientist Investigator Opportunity Network (CSION). The Chief Scientist agreed to sponsor this effort being in line with the ST Vision, "To grow medical leaders". The program is unique in that it is 1) Joint, 2) Corps neutral, 3) has no service obligation, and 4) focused on research mission rather than degree granting. The pipeline of fellows CSION creates is tailored for the needs of the military mission rather than personal gain. With no service obligation, motivated members are offered a non-financial incentive to remain in a career tract specifically designed to retain research-focused medical academicians within the military, in addition to Service Clinical Investigation Programs (CIP) executed by both the Air Force through the 59MDW/ST Clinical Investigations and Research Support office (STC; AFMS CIP funded) and the Army through the Brooke Army Medical Center Department of Clinical Inquiry in coordination with San Antonio Uniformed Services Health Education Consortium (SAUSHEC) and the Air Force Post Graduate Dental School and Clinics to provide continuous quality clinician scientist training during Graduate Medical Education, Graduate Dental Education/Graduate Health and Science Education programs (GME/GDE/GHSE). Coordination with the appropriate clinical chains of command are established to ensure dedicated research time ranging between 0.25-0.8 FTE. 59MDW/ST retains a focus on assisting clinical investigators and growing their research experiences through participation in RDT&E requirements-aligned programmatic research and CIP funded clinical studies and process improvement efforts; CSION is a natural extension of this primary research, education and training mission objective.

59MDW/ST specific leadership and support since office standup, includes assistance with program development, to include scientific, technical, program and resource management support, biostatistician consultation, grants development and submission, research budgets and contracts management, research and regulatory compliance, technology transfer assistance to protect AF and other Service specific and DoD Intellectual Property. Other support provided through 59MDW/ST includes identification of and participation with local scientific entities, program introduction to Services' higher headquarters, DHA, and Joint working groups/committees, as well as scientific leadership, mentorship and resources planning and programming, research education and training, clinical skills operational/readiness training. 59MDW/ST partners with the United States Army Institute of Surgical Research (USAISR), San Antonio Military Health System (SAMHS), SAUSHEC and Naval Medical Research Unit San Antonio (NAMRU-SA) to advertise and recruit potential CSION candidates and identify mentors willing to train and mentor clinician scientists in all areas of (DHP RDT&E) programmatic research.

FACT SHEET

Defense Readiness Education and Material Laboratory for Austere-Care Nascent Delivery (DREAMLAND)

Mission: DREAMLAND seeks to support sustainment of critical operationally-relevant skills for medical personnel. The goal of DREAMLAND is to maintain competency and optimize outcomes of combat casualty care by reinforcing the perishable skills of operational medicine between fixed interval validated training.

Background: Training and education are core components to maintaining a combat-ready force of military medical personnel. The 59MDW strives to implement existing and emerging evidence-based strategies for maximizing the effectiveness of training and education platforms as part of its vision of “Growing Medical Leaders.” Operational readiness is compromised by a lack of sustainment training across medical specialties, which results in a loss of combat-critical perishable skills for military medical personnel. Consistent with Joint Austere Medicine’s general training and education strategy, DREAMLAND seeks to enhance sustainment training by:

- 1) *Identifying gaps in skills and training in the target study population*
- 2) *Development and execution of an improved training modality that directly targets those gaps*
- 3) *Assessing the efficacy of the newly tested program using knowledge-based and practical (hands-on) metrics.*

Vision:

1. *Identify gaps in training and performance to understand the perishable skills of operational medicine.* Develop high-quality assessment tools that are validated by research to identify gaps.
2. *Apply evidence-based learning modalities to develop new training paradigms.* Incorporate **low-dose/high-frequency learning**, which has been shown to improve provider confidence and performance in high-stress, austere, and resource limited settings.
3. *Maximize training efficiency.* Work towards the most efficient solution in terms of 1) time commitment, 2) deployability, and 3) cost for sustaining an international cadre of military professionals
4. *Trial new technology to enhance the DREAMLAND mission and Combat Casualty Care.* Examples of technology include simulation models to increase access to training without the need for live tissue and WiFi and Bluetooth enabled viewing and communication devices to support remote learning from non-local experts.
5. *Understand the role of clinical currency obtained from beneficiary care in sustaining Operational Medicine Readiness.* Determine whether daily clinical practice provides sufficient operationally relevant experience for providers, and develop validated solutions for those gaps that cannot be addressed through peacetime medical care.

Current efforts:

Initial efforts to launch DREAMLAND are focused on sustainment training for the US Air Force Critical Care Air Transport Teams (CCATTs). CCATTs are highly specialized medical teams responsible for aeromedical evacuation of critically ill and severely injured service members in a “flying ICU” environment. While CCATT Initial and Advanced training courses are successful in achieving readiness, mission critical skills can- and likely do- perish in the time between initial and advanced training. Accordingly, the Air Mobility Command (AMC) recognizes a void in operational readiness with current CCATT sustainment training due to loss of perishable skills and knowledge between initial training and deployment.

FACT SHEET

Office of Research & Technnology Application/Technology Transfer & Transition (ORTA/T3)

59 MDW Office of Research and Technology Application, Technology Transfer and Transtition of the 59 MDW Chief Scientist's Office is a "one stop shop" for supporting clinical researchers with securing their intellectual property (IP) with invention disclosures and patent submissions, completion of non-disclosure agreements to protect the IP when collabotrating with others, establishment of colloborative agreements like Cooperative Research and Development Agreements (CRADAs) with organizaitons and academia to enable legal sharing of knowledge, establishing licensing agreements with companies to enable them to utilize AF patents and create medical products for the military to use (technology transfer), and supporting the transition of the resulting knowledge of their research to clinical practices or transition of their material solutions to a program office to develop and field new or enhanced medical products for military and commerical use (technology transition). In addition, they help coordinate research efforts with aligning Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) proposals and projects with 59 MDW research and development core competencies and DoD end-user capability gaps and requirements. They also help establish educational partnership agreements to facilitate Science, Technology, Engineering and Mathematics (STEM) outreach with local schools, non-profit organizaitons, and universities and promite the exchange of knowledge, expertise, facilities, equipment, personnel, methods, technical information and/or intellectual property.

Mission: Support medical research by facilitating collaboration and supporting the transfer and transition of medical technologies and knowledge to commercial and fielded capabilities

Vision: Enabling warfighters with optimized medical knowledge, technologies, and capabilities needed to execute and accomplish operational missions, save lives, and optimize health of service members

Why Technology Transfer (T2):

- Leverages the nation's investment in medical-focused research and development (R&D) to the betterment of medical care for all citizens
- Assists and expands economic development and the commercialization of new products and services that reduce medical costs to the military and civilain sector
- Enhances the traditional concept of patents and licensing as well as other methods to convey knowledge to the private sector
- Links federal laboratory expertise with the marketplace to promote optimizaiton and enhancement applicaito of emerging health care science and research
- Follows DoD Directive 5535.3, DoD Domestic Technology Transfer (T2) Program for Federal Labs to facilitate technology transfer out of the laboratories and into commercial applications and marketplace

The ORTA office interacts with medical and Air Force Legal Offices on behalf of researchers to

facilitate patent submissions and licensing for medical product development, commercial sales, and royalty payments as well as establish collaborative agreements with government, non-profit, academia, industry, and other research and development organizations.

Main Functions:

Establish Cooperative Research and Development Agreements (CRADAs), Material Transfer Agreements (MTAs), and other agreements to exchange materials/specimens for testing and evaluation and other technology transfer agreements to foster partnerships, reduce research costs, and increase collaboration

Assist with establishing joint ownership agreements between researchers and collaborating partners (academia, non-profit organizations, entrepreneurs, and others) to ensure patents and resulting royalties are shared and government's rights and interests are protected

Review research proposals and approved IRB protocols to identify intellectual property (IP) and technology transfer opportunities

Assist with filing patent submission applications with government legal office to facilitate technology transfer of government research to civilian sector

Facilitate establishing licensing agreements with industry to enable commercial funding and efforts that address military requirements for medical products and processes

Established memorandums of understanding and agreements (MOU/MOA) with over government organizations to facilitate cooperative research and collaboration

Support the application of clinical research outcomes into military medical operations

Review research plans to enhance knowledge and technology transition strategies and identify technology transfer opportunities

Conduct FDA SME reviews of research proposals, provide feedback, and enable enhancements of regulatory strategies and likelihood for funding and successful fielding (see next section)

Assist with evaluating commercial medical products for use in DoD clinical operations

Assist researchers with submitting topics to Small Business Technology Transfer (STTR) and Small Business Innovation Research (SBIR) programs and funding opportunities like AFWERX to stimulate innovation, research and development, and help with process improvement

Work with San Antonio businesses, government, and academia to promote activities that address military medical needs and requirements

Support Technology Transition to DoD Program Management Offices (PMOs) for advanced development (6.4/6.5 funding), testing and evaluation (T&E), operational user assessments, regulatory approval (see next section), and fielding for military medical teams and commercial sales and use.

Medical technologies, materials, and changes in practice emerging from DoD laboratories have a broader application to civilian medical practices than just military medical practices in most cases. By including commercial applications in the development of medical products, the costs to develop and procure these items is significantly reduced, as well as improvement in viability, efficacy, availability, and reliability of those medical products.

FACT SHEET

Regulatory (FDA) Assistance, Training and Consultation with Technology Transition/Commercialization Support

Key Services:

- 59 MDW Chief Scientist's Office Regulatory Strategy/Pathway Assistance for Principal Investigators/Researchers and Product Developers/Users
 - Provide assistance when a proposal or project requires a FDA strategy. A feasible and achievable regulatory strategy can enhance the likelihood that a research proposal is selected.
 - Or a technology transition plan for a research proposal
 - Or when the researcher/developer/user need to connect to the right commercial entity capable of providing the missing skills or services.
 - Or the researcher needs to identify other research being performed in academia or in other government or industry partners.
 - In addition, when a business-based technology of interest to researcher or medical personnel needs to be evaluated for commercial availability and/or regulatory status.
 - Or to help develop and submit an FDA submission for expedited review or emergency use exemption or to a DoD regulatory committee.
- Training – Principal Investigators/Researchers and Clinicians
 - It's important for military personnel conducting basic or advanced research or clinical studies to understand the implications of the Food & Drug Administration's requirements and guidance to assure compliance and anticipate the need for compliance with these regulations. This service provides tailored training, briefings, and education programs to fit investigator needs.
- Consultation – Principal Investigators/Researchers and Clinicians
 - Advice and assistance are required for plans and proposals that require basic or advanced regulatory strategy and execution of technology transition plans.
 - Assistance in interfacing with commercial or academic collaborators when approaching the FDA with plans to submit for any regulated medical device or drug. This includes new indications, updates to clinical practices, and new instructions for use, reclassifications, or other regulated process/product changes.
 - Provide assistance in interacting with the FDA, regarding regulatory communications.
 - Finally, provide assistance in the submission of proposals for Technology Transition to DoD Advanced Development (BA 6.4/6.5 funding) as well as new indications for use funding (BA 6.7).

FACT SHEET

Air Force Dental Research and Consultation Service (DRCS)

MISSION: The USAF Dental Research and Consultation Service (DRCS) was established as the Dental Investigation Service (DIS) on 1 October 1976 by Air Force Regulation 162-7 and was charged to provide investigative guidance and assistance for all USAF dental personnel. DRCS today provides clinical, laboratory, and consultative services for dental equipment, dental materials, dental facilities, infection control, occupational health and safety for dental personnel and patient safety. DRCS and its \$6 million laboratory are located within the Battlefield Health and Trauma Institute of Surgical Research at Fort Sam Houston in San Antonio, TX. DRCS moved to Fort Sam Houston as part of the Base Realignment and Closure initiative of 2005 and is co-located with the Naval Medical Research Unit San Antonio and the US Army Dental and Trauma Research Detachment. In October 2014, DRCS went from being a detachment of the USAF School of Aerospace Medicine under the 711th Human Performance Wing and realigned under the 59th Medical Wing as a part of the 59th Dental Group (59 DG).

CORE VALUES:

- Provide a responsive consultant service to Air Force Dental community
- Test, evaluate and provide consultation on dental equipment and materials
- Maintain a responsive website with information on new products, alerts, and infection control, manage Continuing Education (CE) lectures for military members
- Review AF Dental Facility construction projects and equipment requests
- Support Master's Degree level research for Tri-service residency programs
- Collaborate with American Dental Association (ADA) and International Organization for Standardization (ISO) on international dental standards
- Provide education support to federal dental residencies in material science

FUNCTIONS:

- Provide a responsive consultant service for Air Force dentists
- Test, evaluate and provide consultation on dental equipment and materials
- Conduct basic, applied, and evaluative research in support of finding solutions to bridge Air Force dental knowledge gaps
- Maintain a responsive website with information on new products, alerts, and infection control, and manage dental CE lectures for military members
- Review AF dental facility construction and renovation projects and equipment requests via TurboTIGERS
- Support Master's Degree level research for Tri-service residency programs
- Work together with Naval Medical Research Unit San Antonio and the US Army Dental and Trauma Research Detachment on biomedical research
- Collaborate with ADA and ISO on international dental standards
- Provide education support to federal dental residencies in material science

DRCS is staffed with four officers that include a materials scientist, infection-control and patient safety fellowship graduates, as well as a dental laboratory technician, a dental assistant, and a biomedical equipment repair technician. Product evaluations are conducted by the personnel assigned to the Fort Sam Houston facility and coordinated with clinical users throughout the Air Force.

Additionally, our staff works closely with AF Patient Safety and Quality divisions to insure the highest reliability in the safe delivery of dental care to our beneficiaries, be they in-garrison or expeditionary.

Furthermore, we coordinate the Military Dental Continuing Education program and have teamed up with SWANK and the USAF Post Graduate Dental School to provide world-class education presentations for CE credit that is accredited by the American Dental Association (ADA CERP) and is accepted by the Academy of General Dentistry for Fellow and Master Qualifications.

DRCS is forging a path to the future with technology. There are two DRCS websites, one exclusively for military personnel and the other for the public. Their content is similar involving product evaluations, materials information, infection control and patient safety items. DRCS knows there is a plethora of information available to the clinician and the clinic staff. We hope to take that information and provide a road map to safe and effective clinical practice for the federal dental services. We welcome feedback on products to evaluate or issues that need our attention. Please feel free to contact anyone of the staff and we will get back to you as soon as possible.

Additional detailed information about the Air Force Dental Research & Consultation Service (DRCS) available at: <http://www.airforcemedicine.af.mil/DECS/>

FACT SHEET

Air Force Post Graduate Dental School and Clinic (AFPDS)

59 DENTAL GROUP: The Air Force's Flagship for Dental Care and Training in the Department of Defense, building healthier communities by delivering compassionate and personalized dental healthcare, while training premier dental specialists.

MISSION: Perfecting the patient experience through premier education, research, and technology

VISION: Building the future of dentistry... always patient focused

On June 20, 2012, the Air Force Post Graduate Dental School (AFPDS) and Clinic was dedicated on Joint Base San Antonio-Lackland, Texas. This new state-of-the-art facility is host to graduate dental residency programs which train military dentists in advanced specialties and serves as a worldwide referral center. This modern \$38 million building, the Air Force's primary location for graduate dental school, is located adjacent to Wilford Hall Ambulatory Surgical Center.

This 56,000 square foot facility is home to 4 graduate residencies and one fellowship program, including the Maxillofacial Prosthetics Fellowship program, which teaches the art of creating facial prosthetics for wounded warriors with burns or other injuries, as well as patients with cancer or birth defects. The AFPDS also provides support to an additional graduate residency program located at the nearby Dunn Dental Clinic and the Hospital Dental Dentistry Fellowship located at the San Antonio Military Medical Center. The AFPDS also houses the only stereolithography laboratory in the Air Force Medical Service, which utilizes three-dimensional digital modelling processes to fabricate prosthetics and guides for the surgical placement of implants from digital images.

The AFPDS is also home to one of the Air Force's largest dental laboratories and produces more than \$2 million in annual workload. It has over 5,000 square feet of laboratory space, 69 dental treatment rooms, and contains the most technologically advanced equipment for use in dental education programs.

The AFPDS is a branch campus of the Uniformed Services University of the Health Sciences (USUHS) and Air Force, Army, Navy and Canadian dental residents receive training and complete research requirements to earn an MS in Oral Biology degree from the USUHS. Advanced dental research is also completed as part of other AFPDS residency programs due to affiliations with the University of Texas Health Center- San Antonio. Dental Materials research is also supported by the Air Force Dental Evaluation and Consultative Service, which operates a \$6 million dollar laboratory, co-located with the Battlefield Health and Trauma Institute of Surgical Research at Ft. Sam Houston, TX.

FACT SHEET

San Antonio Military Health System (SAMHS)

PERFORMANCE PLEDGE: The San Antonio Military Health System (SAMHS) team promises to provide exemplary healthcare and promote a healthy community.

We pledge to our beneficiaries and partners to provide a safe, high-quality and positive experience that is **patient-centered and family supportive**.

As member of a strong inter-service team, we are committed to you and your health.

BACKGROUND: The SAMHS is led by Air Force (USAF) and Army (USA) general officers and is responsible for providing management and oversight of business, clinical, and educational functions of all Military Health System (MHS) medical treatment facilities (MTFs) located in the San Antonio metropolitan area. As one of the MHS' first Enhanced Multi-Service Markets (eMSMs), the SAMHS is comprised of USAF and USA units that include:

The 59th Medical Wing (component command structure) with subordinate units:

- Wilford Hall Ambulatory Surgical Center
- North Central Federal Clinic
- Randolph Clinic
- Reid Clinic

Brooke Army Medical Center (component command structure) with subordinate units:

- CPT Jennifer M. Moreno Primary Care Clinic
- McWethy Troop Medical Clinic
- Schertz Medical Home
- Camp Bullis Taylor Burk Clinic
- Westover Medical Home
- Corpus Christi Occupational Health Clinic
- Center for the Intrepid (CFI)

<https://www.health.mil/Military-Health-Topics/Access-Cost-Quality-and-Safety/Access-to-Healthcare/Multi-Service-Markets/San-Antonio-Military-Health-System>

With these 12 MTF platforms, the SAMHS operates with a \$1.2B budget and 12K staffs who serve over 240K beneficiaries. As an integrated health system, the SAMHS continues to optimize the direct care system while strengthening the collaboration with Department of Veterans Affairs and Private Sector Carepartners.

The SAMHS is dedicated to the highest quality, patient centered care with a clear focus on safety, access to care, and customer service, while providing first –rate graduate medical and other health education and training programs, conducting state- of-the-art research and maintaining the critical global

readiness of all war fighters.

Establishment of SAMHS

The Defense Realignment and Closure Act (as amended through the National Defense Authorization Act for 2006) directed changes to the MHS' organizational roles, responsibilities, and locations within Joint Base San Antonio.

- Memorandum of Agreement establishing the SAMHS was signed by the Chiefs of Staff of the Air Force and Army on 27 Sep 10
- SAMHS activated on 15 Sep 11
- Deputy Secretary of Defense Memorandum, *Implementation of the Military Health System Governance Reform*, 11 Mar 13; and designated the SAMHS as one of the first, six eMSMs with an Initial Operating Capability (for enhanced authorities) as of 1 Oct 13.

eMSMs

Six eMSMs designated across the MHS—Colorado Springs, Colorado; National Capital Region; Oahu, Hawaii; Puget Sound, Washington; San Antonio, Texas; and Tidewater Virginia with enhanced authorities that include:

“...direct the adoption of common clinical and business functions for the market...” “...direct the movement of workload and workforce between MTFs...”

Community Partnerships/Collaboration

- Federal Health Care Consortium
- South Texas Regional Advisory Council (STRAC)
- San Antonio Mayor's Council of Fitness
- Greater San Antonio Chamber of Commerce Health & Bioscience Committee
- BioMed SA
- VA/DoD test site for integrated Electronic Health Record (iEHR)
- VA/DoD Integrated Disability Evaluation System (IDES)
- North Central Federal Clinic joint venture between AF and VA

State-of-the-Art Healthcare

- Largest DoD inpatient facility
- Only DoD Level 1 trauma center in United States with 425 inpatient beds and 24 operating rooms for inpatient and ambulatory surgery, providing trauma care to both DoD beneficiaries and the local community
- Largest DoD Outpatient Ambulatory Surgical Center
- Only DoD American Burn Association verified Burn Center
- Only DoD Bone Marrow Transplant Unit and Hematology/Oncology Clinic—Ranking among the top cancer programs in the nation
- High-tech Cardiac Catheterization Lab
- Center for the Intrepid provides full spectrum of amputee rehabilitation as well as advanced outpatient rehabilitation for burn victims and limb salvage patients with residual functional loss
- Only DoD rooftop helipad for patient transport
- Renowned graduate medical education program (San Antonio Uniformed Services Health Education Consortium – SAUSHEC) with 35 programs and over 600 residents in training. Our

residents are among the top rated in the nation in board certification.

<https://www.health.mil/Military-Health-Topics/Access-Cost-Quality-and-Safety/Access-to-Healthcare/Multi-Service-Markets/San-Antonio-Military-Health-System>

<https://www.health.mil/About-MHS/OASDHA/Defense-Health-Agency>

<https://www.health.mil/Military-Health-Topics/Access-Cost-Quality-and-Safety/Access-to-Healthcare/Multi-Service-Markets/San-Antonio-Military-Health-System>

FACT SHEET

San Antonio Uniformed Services Health Education Consortium (SAUSHEC)

MISSION: To advance military health and readiness through education of physicians and allied health specialists to lead our nation's Military Health System (MHS) into the future

VISION: Graduating military medical leaders to ensure a ready force anywhere.

VALUES: TExcellence – The synergy of *Teamwork and Excellence*

The SAUSHEC is a renowned graduate medical education program with 37 GME programs and military residents in training. Residents are among the top rated in the nation in board certification.

SAUSHEC Key Facts:

- One of two major DoD multi-service graduate health education training platforms; the other is National Capital Consortium (NCC) at Walter Reed National Military Med Ctr
- Second largest DoD graduate health education training platform; largest for the Air Force
- 37 physician graduate medical education (GME) specialty programs with 638 interns, residents, and fellows (trainee mix: 380 Air Force, 255 Army, 3 Navy)
- 22 graduate-level allied health education (GAHE) programs with 77 trainees; largest DoD GAHE platform (trainee mix: 57 Army, 16 Air Force, 5 Navy)

Why train at SAUSHEC?

- Robust training platform – BAMC Level 1 trauma center, best case mix in DoD for training
- “Meritorious recognition” top 10%, National Surgical Quality Improvement Program (NSQIP)
- Engaged faculty; 358 peer-reviewed publications, 390 conference presentations past academic year
- Strong focus on faculty development; faculty are well-versed in latest teaching methods
- Synergy of multiple specialties expected in a major medical center/consortium
- Largest simulation center in DoD; case scenario generation to augment live experiences
- Exceptional first-time board certification pass rate – 97% across all specialties in 2018
- Committed partnerships with VA and civilian institutions for additional training experiences
 - o South Texas VA, University of Texas Health San Antonio, University Hospital, Methodist Hospital System, Children's Hospital of San Antonio, among others
- San Antonio is Military City, USA! Strong military heritage and community support; large retiree community; low cost of living; growing population (top 5 in nation for growth rate).

<https://www.bamc.health.mil/saushec/>

GME PROGRAMS:

- Allergy/Immunology
- Anesthesiology
- Dermatology
- Diagnostic Radiology
- Musculoskeletal Radiology
- Emergency Medicine
- Emergency Medical Services
- EM Ultrasound
- Internal Medicine
- Cardiology
- Endocrinology
- Gastroenterology
- Hematology/Oncology
- Infectious Disease
- Nephrology*
- Pulmonary Critical Care
- Rheumatology
- Sleep Medicine
- Neurology
- Nuclear Medicine
- Obstetrics/Gynecology
- Ophthalmology
- Otolaryngology
- Pathology
- Cytopathology
- Pain Medicine
- Clinical Research
- Pediatrics
- Adolescent Medicine
- Neonatology
- General Surgery
- Surgical Critical Care
- Orthopedic Surgery
- Psychiatry*
- Transitional
- Urology

** University of Texas Health Center San Antonio (UTHSA) Sponsored Program*

The Graduate Allied Health Education Programs (GAHE) falls under SAUSHEC. The GAHE contains 22 programs, supported by a variance of sponsorships and multiple accrediting agencies. GAHE programs include:

ARMY

- CRNA
- Child Peds Psychology
- Clinical Psychology Internship
- Clinical Psychology Residency
- Clinic Health Psych Fellowship
- Dietetic Internship
- EM Ultrasound
- Occupational Therapy
- Optometry
- Physical Therapy
- Social Work Internship
- Trauma Treatment Healthcare

AF/ARMY PROGRAMS

- EM PA
- General Surgery PA
- Orthopaedic PA
- Neuropsychology Fellowship
- Pharmacy Practice

AIR FORCE

- Clinical Health Psychology
- Clinical Psychology Intern
- ENT PA
- Clinical Pastoral Education
- Social Work Internship

FACT SHEET

Adult Extracorporeal Life Support (ECLS) Program

MISSION: To provide comprehensive ECLS support to eligible adult patients including combat casualties with respiratory, cardiopulmonary, and multi-organ failure and to serve as the hub for Department of Defense (DoD) Adult ECLS care and research.

BACKGROUND:

- ECLS utilizes modified heart-lung bypass equipment to provide temporary (days to weeks) heart and lung function during periods of severe cardiopulmonary failure
- The BAMC Adult ECLS program received pilot funding to explore the need for this level of care for adult patients and combat casualties in 2010
- Since April 2011, candidate patients referred to the BAMC Adult ECLS program have been prospectively tracked as part of an Institutional Review Board approved data collection protocol
- In September 2012, the BAMC Adult ECLS program managed its first patient and has since achieved numerous remarkable milestones.
 - Roll-out of a long-range transport team is currently underway
 - Sustainment requires a clear path for designee care
- Includes Extra-Corporeal Membrane Oxygenation (ECMO) to provide partial heart-lung bypass ECMO to eligible infants and children suffering from severe cardiopulmonary failure. An Adult ECMO Center was formally stood-up in 2013, the only center in DoD.

BAMC Adult ECLS Program:

- To date 17 patients have been supported with ECLS by our program
- First adult fixed wing ECLS transport in CONUS, January 2013
- First adult trans-Atlantic ECLS transport in the DoD, July 2013
- First adult ECMO bridge to lung transplant, October 2013
- Referring Intensive Care Units (ICUs) include the Burn ICU, the Medical ICU, Surgical ICU, and Trauma ICU and numerous civilian institutions
- Of the 17 patients, 8 have undergone transport
 - Medical Director, Nurse Program Manager in place
 - ECLS physicians, Nurse ECLS specialists trained
 - Credentialing and certification process in place
 - Equipment and supplies purchased
 - Standard Operating Procedures developed and hospital-wide policy approved

Long-Term Vision: For BAMC to be the DoD's Adult ECLS Clinical and Research Hub.

- Provide global ECLS Lung and Heart Rescue Transport
- Provide Subject Matter Expert and transport support to the Landstuhl Regional Medical Center (LRMC) Lung Team with an ECLS Unit Type Code
- Provide SME and transport support to the Tripler Army Medical Center ECLSteam
- Build on the close working relationship between the USAF and the US Army in the clinical care of combat casualties and other patients with severe lung failure. Key milestones in this relationship were:

- Decades of leadership by Wilford Hall Medical Center in the aeromedical transport of neonatal ECMO patients
- The longstanding ECLS animal research program at ISR
- The creation of an Acute Lung Rescue Team (ALeRT) at Landstuhl Regional Medical Center in 2005, based on the successful Army Burn Flight Team and USAF CCAT Team models (R. Fang 2011)
- Performance of the first combat-zone ECMO insertion and transport by the ALeRT in October 2010
- Creation of an adult ECLS program by Lt Col Jeremy Cannon within the ISR Burn Center in 2012
- Collaborate with other clinical and research sites in the DoD
 - Center for Sustainment of Trauma and Readiness Skills (CSTARS) – Baltimore
 - CSTARS Cincinnati/St. Louis
 - David Grant Medical Center

Education and Training:

- Supports graduate medical education in Trauma/Critical Care, General Surgery, Burn Surgery, Internal Medicine, Cardiology, and eventually Emergency Medicine
- Provides training for 6 staff physicians, 2 Trauma/Critical Care fellows, 2 Burn fellows, 10 Burn ICU nurses, and 4 respiratory therapists
- Provides neonatal and pediatric Extra-Corporeal Membrane Oxygenation nurse specialists opportunities for additional training
- Offers training to personnel who makes a permanent change of station to LRMC

Readiness:

- ECLS for combat casualty transport has saved multiple lives to date
- Pumpless support used in the past has been upgraded to full ECLS recently
- The LRMC Lung Team has now transported 2 patients from the Area of Responsibility to LRMC on ECLS
- Multiple additional patients have been started on ECLS after arrival at LRMC
- These patients currently receive their ECLS care at a German civilian hospital
- A Critical Care Air Transport Team or Burn Flight Team model could be used to bring these patients to BAMC in the future.

FACT SHEET

CRITICAL CARE AIR TRANSPORT TEAM (CCATT)

MISSION: To operate an intensive care unit in an aircraft cabin during flight – adds critical care capability to the U.S. Air Force/Coalition Forces Aeromedical Evacuation System.

BACKGROUND: The Critical Care Air Transport Team (CCATT) Unit' concept was developed by Maj Gen (Dr.) P. K. Carlton and Col Chris Farmer at the 59th Medical Wing, Lackland Air Force Base, Texas in response to Joint Vision 2010. CCATT patients have received initial stabilization, but are still critically ill; requiring evacuation from a less capable, to a more capable hospital.

DEVELOPMENT: The CCATT pilot program initiated in May 1994; and by June 1996, the CCATT was formally approved and adopted into the USAF Aeromedical Evacuation System.

- Air Mobility Command, the AES authority, assumes responsibility of teams
- 59th Medical Wing (AETC) is the designated Pilot Unit, responsible for concept of operations, allowance standard content, performance improvement, and innovations to equipment and procedures
- Developed Hurricane Rapid Response Teams to assist with Humanitarian evacuations during Hurricane Season in the United States. First in the Military Medical System.

TEAM COMPOSITION:

- CCATT is a three member team (critical care physician, critical care nurse and respiratory therapist)
- CCATT Extender Team (two critical care nurses) allowing a CCATT to manage additional patients, or serves as medical attendants for non-critical patients
- The 59th Medical Wing is tasked to provide 16 CCAT Teams
- CCATT augments an AE crew of five personnel (two flight nurses, three flight technicians) when critically ill patient(s) are transported.
 - Each team can care for three critically injured, monitored patients (or six less severely injured)
- CCATT medical gear is man portable and battery operated, consisting of two backpacks (47 lbs. each), nine equipment and medical supply bags, and one drug case.
- Three full sets each containing, life support respirator, cardiac/physiologic monitor, computerized intravenous infusion pump, continuous suction unit and laboratory-testing device. Also included, procedure kits to manage patient complications.
- Team Employment
 - CCATT is designed to support combat casualties being evacuated from combat
 - In OPERATION ENDURING FREEDOM (OEF) and OPERATION IRAQI FREEDOM (OIF), CCATT has participated in operations at major air bases, and deployed far forward with AE teams, and operates with Special and Army Forces.

FACT SHEET

Joint Trauma System (JTS) Right Patient, Right Place, Right Time, Right Care (R4)

MISSION: To provide evidence-based process improvement of trauma and combat casualty care, to drive morbidity and mortality to the lowest possible levels, and to provide evidence-based recommendations on trauma care and trauma systems across the Department of Defense (DoD).

VISION: Every Soldier, Sailor, Airman, and Marine injured on the battlefield or in any theater of operations will be provided with the optimum chance for survival and maximum potential for functional recovery.

Data collection is the foundation of the JTS. The use of the data by doctors, nurses, analysts, and researchers is changing trauma medicine and combat casualty care, and improving outcomes for the severely wounded warrior. Thus, collection and analysis of patient health data is mission-critical. The vehicle for collecting this data is the Department of Defense Trauma Registry (DoDTR), formerly known as Joint Theater Trauma Registry (JTTR). JTS uses the DoDTR data to develop best practices for multiple levels of care for battle and non-battle trauma patients and providers in austere environments. A multi-disciplinary approach reduces combat morbidity and mortality by identifying trends or gaps in care and bridging the gaps. A decreased case fatality rate of less than 9%, despite increasing acuity of combat injured patients, shows the greatest measurable impact.

JTS is the first to create integrated multi-specialty registries where Health Information Managers obtain the specialty information. For example, JTS combines detailed clinical data from the trauma, orthopedic and infectious disease registries to improve care from point of injury through surgical intervention.

During missions Trauma Medical Director and Trauma Nurse Coordinators are rotated from each service and integrated into the theater of operation to implement the best practices. The next step is to leverage the program to extend its benefits to trauma communities beyond the Theater of War.

DoD TRAUMA REGISTRY (DoDTR): The JTS efforts are supported by the concurrent collection and analysis of data maintained in the Department of Defense Trauma Registry (DoDTR), formerly Joint Theater Trauma Registry (JTTR). The DoDTR is the data repository for DoD trauma-related injuries. The goal of this registry is to document, in electronic format, information about the demographics, injury-producing incident, diagnosis and treatment, and outcome of injuries sustained by US/Non-US military and US/Non-US civilian personnel in wartime and peacetime from the point of wounding to final disposition.

TRAUMA CARE DELIVERY: The DoDTR supports US military performance improvement initiatives with global-wide collection and aggregation of combat casualty care epidemiology, treatments and outcomes. DoDTR data enables JTS to conduct performance improvement studies and gap analyses for medical capabilities to direct ongoing and future combat casualty care research, trauma skills training, and direct combat casualty care. DoDTR data analysis was instrumental in

proving the Golden Hour evacuation policy saves lives. DoDTR data also provided the supporting evidence to prompt a doctrinal change of Army flight medics from EMT-Basic to an EMT-Paramedic to improve the survivability of combat casualties. JTS is the first to create integrated multi-specialty registries. These registries are:

- **Acoustic** – Collects data related to acoustic trauma injuries to the inner ear. The registry tracks the patient's acoustic injury, evaluation results, and care management that is not included in initiating DoDTR trauma record.
- **Infectious Disease (ID)** – Collects trauma-related ID epidemiology; a central repository for bacteria isolates infecting war wounded.
- **Military En Route Care Registry (MERCuRY)** – Collects data about treatment during medical evacuation (MEDEVAC) and casualty evacuation (CASEVAC).
- **Military Orthopaedic Trauma Registry (MOTR)** – A registry of military orthopaedic injuries designed to augment the DoDTR for specific orthopaedic information such as injury patterns, fracture characteristics, treatment and complications associated with combat extremity injuries.
- **Pre-Hospital Trauma Registry (PHTR)** – Captures never before attainable prehospital trauma care information provided on the ground at the point of injury by all combat forces.
- **Outcomes (Recovery and Rehabilitation)** – Collects data about a patient's recovery and rehabilitation after he/she leaves the treatment facilities.
- **Traumatic Brain Injury (TBI)** – Collects data related to patients with TBI injuries, ranging from mild concussion to a penetrating head injury.
- **Vision** – Collects ocular clinical data, from injury to treatment to vision recovery.

JTS: THE DOD CENTER OF EXCELLENCE FOR TRAUMA

- **Data Acquisition** – Mines the medical records to abstract, code, and enters critical trauma data into the DoDTR database for use in support of the JTS mission.
- **Data Analysis** – Develops queries and provides data from the DoDTR in response to requests for information. Conducts classified and non-classified data analysis.
- **Data Automation** – Supports the information technology for the DoDTR and data-related special projects. Designs and implements special-project database applications, related architecture, and documentation. Handles documentation needs for JTS to maintain Program compliance with the Defense Health Agency.
- **Performance Improvement** – Coordinates performance improvement (PI) activities across the spectrum of trauma care. Participates in the development, maintenance, and adherence to Clinical Practice Guidelines. Develops PI course content and training, and resolves trauma system patient care issues.
- **Education** – Develops and conducts pre-deployment training of the CENTCOM Joint Theater Trauma System (JTTS) teams, DoDTR user training, and JTS staff training. Develops educational products for COCOM trauma system development. Secures continuing education credits and coordinates performance improvement and other trauma related courses.

Award-Winning Service: JTS won the 8th Annual Major Johnathan Letterman 2015 Medical Excellence Award for excellence in battle field medicine and outcomes.

In 2014, the JTS earned the Force Health Protection Award granted by the Association of Military Surgeons of the United States. The same year JTS received the US Army Surgeon General's

prestigious Wolf Pack Quarterly and Annual Awards for superior collaboration and team accomplishment. The award recognized the collection and analysis of trauma data from the DoDTR to formulate enhanced CPGs which reduced morbidity and mortality of casualties to the lowest level in history. The JTS is recognized as a Defense Center of Excellence, one of only seven DoD entities to receive the honor.

JTS Fosters Innovation: In 2014, the JTS earned the Force Health Protection Award granted by the Association of Military Surgeons of the United States. The same year JTS received the US Army Surgeon General's prestigious Wolf Pack Quarterly and Annual Awards for superior collaboration and team accomplishment. The award recognized the collection and analysis of trauma data from the DoDTR to formulate enhanced CPGs which reduced morbidity and mortality of casualties to the lowest level in history.

DoD Center of Excellence: The JTS is recognized as a Defense Center of Excellence, one of only seven DoD entities to receive the honor.

- The DoD supports trauma care research to increase readiness and decrease injuries and preventable death, while improving health and quality of life for those Service members who have suffered traumatic injuries.
- Trauma initiatives focus on the prevention, diagnosis, mitigation, treatment of trauma injuries, and rehabilitation of injured Service members.
- The DoD uses a central trauma data repository to standardize and facilitate performance improvement.
- Trauma-related data through the full spectrum of military operations is gathered and analyzed in order to exchange information across the DoD, and across national and international trauma communities of interest.
- The DoD identifies, tracks, and recommends performance improvement measures to ensure the appropriate evaluation and treatment of injured Service members across the continuum of care.

JTS BRANCHES

Data Acquisition: This team is responsible for data abstraction and entry of concurrent and retrospective records into DoDTR, as well as the quality assurance of the data. It is responsible for creating and updating the DoDTR data definitions and business rules. Data Acquisition also provides support applications and services to DoDTR users.

Data Analysis (Special Projects): This group manages the data sharing agreements process and provides the DoDTR data in response to data requests. It conducts classified and non-classified data analysis for internal and external requests for research purposes.

Automation: The Automation Branch supports the information technology needs of the DoDTR and data-related special projects. The team creates proof of concept and prototypes, and implements database applications and related architecture. It also handles the documentation needs of JTS and delivers educational literature to allow users to fully leverage the DoDTR registries.

Education: The educational arm of JTS cultivates and conducts pre-deployment training of the US Central Command, JTTS teams, DoDTR user training, and JTS staff training. It facilitates the development of educational products for Combatant Command trauma system. The group also coordinates and manages continuing education opportunities and performance improvement courses.

Performance Improvement (PI): This branch coordinates the PI activities across the spectrum of trauma care. It helps develop PI course content and training, and resolve trauma system patient care issues.

Military Orthopaedic Trauma Registry (MOTR): This team manages the MOTR registry which house trauma care information about Warriors from all Services who sustain extremity injuries. MOTR seeks to improve functional outcomes of combat casualties by using a systematic approach to determine the acute and long term outcomes of all battlefield injuries, improvement in treatment, and the logistical implications.

FACT SHEET

Diabetes Center of Excellence (DCOE)

MISSION: Promote excellent diabetes care and prevention across the Military Health System (MHS).

The 59th Medical Wing is home to the Diabetes Center of Excellence, a premier Military Health System specialty clinic dedicated to providing standardized diabetes care to beneficiaries across the military health care system.

Clinical Team

The Clinical Team provides evidence-based diabetes prevention, education and management to any Tri-Care beneficiary within the San Antonio Military Health System. The Multidisciplinary Team is involved with the development and implementation of local and VA/DoD diabetes clinical practice guidelines. The team also provides support for the education and training of professional staff across the MHS.

Diabetes Management (referral required)

The multidisciplinary staff collaborates with the PCMH to assist both Type 1 and Type 2 patients to manage their diabetes. *Specialty care* includes, but is not limited to, insulin pump management, carbohydrate counting, pattern management, and continuous glucose monitoring.

Diabetes Education (may self-refer)

The Diabetes Self-Management Education and Support (DSMES) services are recognized by the American Diabetes Association. Provides initial education (up to 10 hrs), recurring/refreshers education and individual support as needed.

Diabetes Prevention (may self-refer)

The Prevention Team offers patients at risk for diabetes a *Preventing Diabetes Workshop*, as well as, the *DPP Group Lifestyle Balance* program. The CDC approved curriculum provides an intensive 12 week intervention followed by eight monthly support/education sessions. Program target goals are: 7% weight loss and 150 minutes of moderate activity per week.

Outreach/Training

The Outreach Team provides a conduit for promoting best practice to military treatment facilities throughout the DoD and VA. Subject Matter Experts (SMEs) develop and promote educational programs, as well as, provide consultative services as requested.

Diabetes Central

A centralized repository of all things diabetes providing a centralized resource for the prevention, education, and management of diabetes. The resources, links and tools address multiple levels of professional practice. There healthcare providers can find slide presentations, teaching tools, and other helpful resources.

Located on the Air Force Knowledge Exchange
<https://ks.afms.mil/kj/kx4/DiabetesCentral/Pages/home.aspx>

Diabetes Champion Course

A 4-day team-based comprehensive diabetes course. Curriculum includes: standards of diabetes care, patient management, and utilization of resources. Offered biannually (Apr/Sep). 21 CME/CNE offered

Diabetes ECHO

“Virtual Grand Rounds” via DCS and audio teleconferencing. Broadcasts at noon CT, 2nd and 4th Friday of each month. Offers didactic and consultative opportunities to PCMH teams. 1.0 CME offered

Disease Management Webinars

Monthly educational series via DCS on diabetes related topics for disease managers, nurses, and clinic support staff. 0.5 CNE offered

DPP Group Lifestyle Balance Facilitator Training

Course to support implementation of DPP programs throughout the MHS

Diabetes Self-Management Education and Support (DSMES) via MIST

A Diabetes Self-Management Education and Support (DSMES) Program (recognized by the American Diabetes Association) provided to patients at DoD facilities via the Medical Interagency Satellite Training (MIST) network. Broadcast from the DCOE and facilitated by disease managers or other staff members, the program provides standardized education for patients in resource poor areas.

Translational Research

The Research Team conducts translational research and clinical validation studies to determine best exportable models of care.

Current projects:

- DREAM: Diabetes Remote Assisted Monitoring
- Diabetes in Combat
- GLP-1 and Testosterone
- DSMES program evaluation
- Pinnacle Clinical Research: NASH Registry
- Predictors of T2DM in USAF Members at Accession

FACT SHEET

Hearing Center of Excellence (HCE)

MISSION: To heighten readiness and to continuously improve the health and quality of life for members of the Armed Forces and Veterans through advocacy and leadership in the development of initiatives focused on the prevention, diagnosis, mitigation, treatment, rehabilitation, and research of hearing loss and auditory system injuries.

VISION: To fulfill America's commitment to all who support and defend our Nation by serving as the nation's premier center for promoting excellence in the prevention, diagnosis, mitigation, treatment and rehabilitation of hearing loss and auditory system injuries for our Military Service Members and our Veterans.

The HCE was legislated by Congress in the fiscal year 2009 National Defense Authorization Act. And directed (to the maximum extent practicable) to partner with the Department of Veterans Affairs (DVA), institutions of higher education, and other appropriate public and private entities. The HCE's primary responsibilities include:

- Developing a data registry to track hearing loss and auditory system injuries across the Armed Forces and sharing the data in the registry with the DVA
- Encouraging and facilitating the conduct of research
- Developing best practices and clinical education
- Ensuring coordination of rehabilitation benefits and services offered by the DVA to former Service Members.
- In October 2009, the Air Force Medical Service was officially designated as the Department of Defense lead component for the HCE.
- The HCE was established to develop strategies to address tinnitus and hearing loss, which are the most prevalent service-connected disabilities.
- With an estimated \$2 billion a year spent by the DVA for 1.2 million veterans with tinnitus and hearing loss, establishing a center focused on auditory issues has the potential to reduce, not only the disability cost of hearing loss, but the degree of impairment suffered by Service Members.

FACT SHEET

Joint Warfighter Refractive Surgery Center of Excellence

The Joint Warfighter Refractive Surgery Center (JWRSC) located at Wilford Hall Ambulatory Surgical Center (WHASC), Joint Base San Antonio - Lackland, TX is currently the largest and most productive of the Air Force's seven refractive surgery centers averaging over 2700 refractive surgery procedures per year. This joint Air Force/Army center is equipped with the latest in refractive surgery technology and employs a staff of six fellowship trained corneal surgeons supported by twenty-two highly skilled optometrists, technicians, and administrative personnel.

Although officially established as the JWRSC in 2007, the facility has been a pioneer in military laser eye surgery since the first Photorefractive Keratectomy (PRK) procedure was performed by an Air Force Ophthalmologist here in 1999. Since then more than 48,164 active duty personnel have undergone laser vision correction at the facility, optimizing their visual performance in the combat environment by reducing their dependence on glasses and contact lenses.

MISSION: The mission of the JWRSC is three-fold—**Readiness, Education and Research.**

VISION: Provide the Best Refractive Technology and Outcomes to Give our Most Important Weapons System--Our People--the Combat-Edge in Vision!

READINESS: Maximizing the combat readiness and mission effectiveness of our airman, soldiers and sailors through vision enhancement is our most critical and important mission.

- Provides State-of-the-Art Refractive Surgery to Active-Duty members from all three military services and the US Coast Guard
- The highest-volume Refractive Surgery Center in the Air Force
- Has performed 40% of all USAF surgeries to date with no sentinel events
- The referral center for all complicated refractive cases
- Provides Surgical Services to Air Force, Army and Navy medical facilities throughout the southern and mid-western regions of the country
- One of only two Department of Defense (DoD) Joint Refractive Surgery Centers

EDUCATION: WHASC has the only Air Force Ophthalmology Residency which is also the DoD's largest Ophthalmology Residency Program with an average enrollment of eighteen Air Force and Army residents.

- The JWRSC is the only Air Force Center with staff providers certified as Physician Trainers for Laser Refractive Surgery. Residents as well as ophthalmologists from the field, routinely receive hands-on training in refractive surgery procedures at the JWRSC.
- The JWRSC has Certification Authority for Air Force Optometrists for co-management of refractive surgery patients.
- The JWRSC staff conducts the only US Army Optometry Co-Management Course.
- A training agreement with the University of Texas Health San Antonio allows the JWRSC

- staff to train civilian Ophthalmology residents in refractive surgery.
- A Teaching Affiliation Agreement (TAA) is currently in place with two civilian universities allowing their Cornea and Refractive Surgery Fellows to gain hands-on refractive surgery training at the JWRSC.
- The JWRSC is a recognized National Center of Excellence in Refractive Eye Care.

RESEARCH: As a Graduate Medical Education (GME) teaching institution, many WHASC residents are required to do research as part of their training and the staff doctors are highly encouraged to be involved in research activities as part of the GME certification process.

- The JWRSC has a professional staff experienced with both human and animal studies
- The JWRSC is the Operational Test and Evaluation Center for all emerging Refractive Technology in the Air Force Medical Service
 - Conducted the Federal Drug Administration Trial for Wavefront-Guided PRK with Naval Medical Center San Diego
 - Conducted research on emerging technologies to enhance corneal wound healing
 - Collaborated with United States Air Force School of Aerospace Medicine and Aeromedical Consult Service for Aviation LASIK Study and Outcome tracking of Aviation and Refractive Surgery
- The center typically has more than twenty active research protocols at any one time
 - Currently collaborating with industry on clinical trials to evaluate new drugs and equipment used for refractive surgery procedures
 - Ongoing research in post-operative pain control through evaluation of pain medication options, bandage contact lens optimization, and improvement of surgical techniques
 - Ongoing research to evaluate new instruments and equipment upgrades to optimize refractive surgery outcomes
 - Ongoing research in the correction of presbyopia, phakic intraocular lenses, and other refractive procedures

Over 10 Papers and Posters presented annually at National and International Ophthalmology and Refractive Surgery Meetings

FACT SHEET

Hyperbaric Medicine

MISSION: The Wilford Hall Ambulatory Surgical Center (WHASC) Hyperbaric Medicine Flight is one of only two clinical hyperbaric chambers in the AFMS. The WHASC hyperbaric medicine flight opened on March 21, 2008, following the closure of Hyperbaric Medicine at Brooks City-Base, Texas. Hyperbaric chambers are used to deliver oxygen at high pressure. Under such conditions, oxygen behaves as a drug which is FDA approved to treat 14 indications.

BACKGROUND: The Air Force has used hyperbaric oxygen therapy for more than 40 years. Originally, the therapy was used to treat aviators and aircrew trainees who suffered decompression sickness.

- Hyperbaric oxygen can be used to treat several life threatening conditions, such as crush injuries, carbon oxide poisoning, burns, non-healing ulcers, compromised skin grafts, radiation soft tissue damage and chronic infections.
- Hyperbaric chamber treatment promotes faster healing of hard-to-heal wounds by exposing the body to pure oxygen inside a pressurized chamber. With higher pressure, more oxygen is delivered and increased oxygenation of the blood and capillary bed density, leading to faster healing.
- In March, 2008, WHASC purchased two new hyperbaric chambers, and began hyperbaric oxygen therapy in the hospital; and staffed the department with board-certified hyperbaric medicine physicians; fellows, nurses, technologists, and maintenance technicians. Each of which trained in the administration of hyperbaric oxygen therapy.
- September 2015 marked the construction efforts of a new state-of-the-art Hyperbaric Medicine facility at BAMC. The chambers at WHASC will be transferred to the new facility. Once located in a hospital setting, the new facility will be able to treat a great number of patients, especially those requiring hospitalization.
- June 2017, Joint Base San Antonio, Lackland Texas, the 59th Medical Wing opened the doors to a new state-of-the-art facility near the San Antonio Military Medical center on JBSA Fort Sam Houston to expand the wing's capacity to provide hyperbaric medicine and wound care.
- There is much pride in the new facility and the partnership with the Army at MHS's most productive inpatient facility. The specialized equipment affords critical care capability inside the chamber. In essence, the chamber becomes an intensive care unit room under pressure.

NEW FACILITY: By moving operations adjacent to BAMC, the only level one trauma center in the DoD, the 59 MDW can work more closely with the Army and Navy to deliver care to more patients. The 13,281 square foot, \$13.6 million facility can treat the full spectrum of hyperbaric medicine including advanced wound care. The facility is a comfortable, relaxing setting that looks like a hospital room instead of a cylinder-like chamber. In the rectangle, six-person multiplace chamber and single patient or monoplace chambers, doctors tailor all treatment plans to meet patient needs.

FACT SHEET

Tri-Services Research Laboratory (TSRL)

MISSION: Provide increased military capabilities for studying directed energy weapons effectiveness, and ways to protect service members by improving health and safety standards for safe exposures to directed energy devices. The TSRL houses Navy, Air Force and Army research programs that address the health and safety effects of exposure to a variety of stressors. The TSRL includes various laser and biological research labs and echo-free chambers, enabling the Navy, Air Force and Army to simultaneously conduct research on the biological effects of directed energy.

NAVY: The Navy Medical Research Unit – San Antonio (NAMRU-SA) conducts research to study the effects of directed energy on living systems and tissues. Directed energy sources are used extensively in the Navy and are part of the next generation of weapons and counter-weapons systems. Current research is focused on evaluating the potential bio-effects associated with these systems and aiding in establishment of exposure standards adequate to protect the health and safety of all personnel operating in and around these sources.

AIR FORCE: The 711HPW Directed Energy Bioeffects Department, Air Force Research Laboratory, (711HPW-AFRL/RHD) captures and quantifies the biological effects of directed energy weapons, so researchers can develop non-lethal weapons and the defensive means to protect our own service men and women from this type of weapon. The Tri Service Research Laboratory (711HPW, TSRL) currently supports efforts conducted by the 59 MDW Chief Scientist's Office Restorative Endeavor for Service members Through Optimization of Reconstruction (RESTOR) and the Surgical and Technological Alternatives for Traumatic Injuries in Combat (STATIC) programs. These program's goals are to research and develop smart, cyber, and autonomous strategies for therapeutic and technological interventions for patients experiencing pain, cardiopulmonary, and multi-organ failure and to study, develop, demonstrate, and translate material and non-material solutions that address gaps in acute surgical interventional management to achieve improvements in mortality, limb salvage, functionality, and quality of life for traumatically-injured patients. Current approved Institute Animal Care and Use Committee (IACUC) protocols at the TSRL will support technologies for hemorrhage control and treatment of patients with vascular injuries in the Joint Services, forward deployed medical and aero-medical evacuation systems, while providing superior quality of care for military health system beneficiaries within the Joint Service scope of operations.

ARMY: The Veterinary Science Department works in parallel with staff researchers to provide services, facilities, and technologies to support the diverse animal-based research requirements. The veterinary staff performs comprehensive oversight to ensure the ethical use of laboratory animal models under controlled and healthful conditions. The staff also manages the preventive medicine programs and provides preoperative and post-operative care for the research animal models. Experienced scientific and technical personnel offer consultation and assistance in the design of research protocols and in the selection of appropriate models to meet the research objectives of investigators.

FACT SHEET

Brooke Army Medical Center (BAMC)

BAMC is located on Fort Sam Houston in San Antonio, Texas and is the largest inpatient medical facility in the Department of Defense. It plays a critical role in patient care, graduate medical education and research, as well as taking care of wounded service members.

The hospital staff provides inpatient care in a 1.5 million-square-foot, state-of-the-art medical treatment facility with 613 beds.

As a certified Level 1 Trauma Center, BAMC receives more than 5,700 emergence room visits each month. It is one of only 31 hospitals in the United States that holds both Level 1 Trauma certification and accreditation from the American burn Association.

In addition, 40 beds are dedicated to the Army Institute of Surgical Research, which operates the only Department of Defense Burn Center—The Army Burn Center.

The hospital, formerly had cared for thousands of service members who were injured in Operations Iraqi Freedom and Enduring Freedom, and nearly 1,500 medical professionals have been deployed in support of those missions. Since the Global War on Terrorism began in September 2001, the Burn Team had made frequent trips to Landstuhl Army Regional Medical Center in Germany, transporting patients back to BAMC for care.

The hospital sustains over 89 accredited educational programs to include 38 graduate medical education programs, six nursing programs with two nursing accredited programs, Emergency Medical Technician Basic certification programs, 25 allied health educational programs, 18 enlisted allied health and Practical Nurse Course medic phase II training programs along with additional programs in administration and allied health specialties.

BAMC Services:

- 32 Operating Rooms for Inpatient and Ambulatory Surgery
- Medical, Pediatric and Surgical Subspecialty Clinics
- Primary Care
- Labor/Delivery/Recovery Unit
- Neonatal Intensive Care Unit (NICU) with ECMO (extracorporeal membrane oxygenation)
- Pediatric Intensive Care Unit (PICU)
- DOD's only Bone Marrow Transplant Unit
- Inpatient Psychiatry Unit
- State of the-art Cardiac Catheterization Lab

FACT SHEET

BAMC – Department of Clinical Investigation

The **Mission** and **Goal** of the Department of Clinical Investigation (DCI) is to provide a world- class medical research environment for Trainees and staff here at Brooke Army Medical Center. We will make every effort to support your research by channeling your ideas and efforts into full- fledged medical research protocols capable of addressing the medical needs of our Army. We support you by providing a one-stop shop for all your research requirements: Consultation services in formatting and writing your research proposal; Intramural funding and facilitate requests for External funding sources both private and public; Contract management and research purchases.

The DCI facilitates and supports the entire process of research approval including research proposal preparation, submission, review, monitoring, funding and contract management of approved research, by providing program administration, education and consultation for all research activities at Brooke Army Medical Center and the three Military Facilities (Fort Hood, TX, Ft. Polk, La and Ft. Sill, OK) and clinics covered under its Assurances.

DCI Research Service

The mission of BAMC DCI Research Service is to promote, coordinate, support and oversee organized scientific inquiry in basic laboratory research, clinical research, and pre-clinical research using human and animal subjects at BAMC and the Southern Regional Medical Command (SRMC). The DCI Research Service also supports graduate medical education (GME) by encouraging and supporting research that includes residents at BAMC. The DCI Research Service staff includes physiologists, biochemists, cellular biologists, immunologists, and a veterinarian, all with research experience including designing and executing research proposals and publication of results in peer-reviewed journals. These individuals are available by appointment to aid in research guidance and support. DCI Research service can be broken down into three categories: human research, animal research, and laboratory research.

Part of the DCI's mission is to support GME. Specifically, the DCI desires to get residents involved in research. Intramural funding up to \$7500 per year may be available for research projects that involve resident participation.

For more information, refer to: <https://www.bamc.health.mil/staff/research/dci/>

FACT SHEET

Brooke Army Medical Center (BAMC) Center for Nursing Science & Clinical Inquiry (CNSCI)

Vision: "Creating a Culture of Inquiry"

Mission statement: The Center for Nursing Science & Clinical Inquiry (CNSCI) at Brooke Army Medical Center (BAMC) supports Patient Caring Touch System (PCTS) through providing decisional support, and by coaching, teaching and mentoring nursing staff on Evidence-Based Practice (EBP) and research.

CNSCI staff consists of:

PhD-prepared Nurse Scientists - facilitate and conduct research and EBP projects aligned with:

- BAMC
- Regional Health Command-Central (RHC-C)
- Army Nurse Corps
- Army Medical Command

Advance Practice Registered Nurses (APRNs), who are usually Clinical Nurse Specialists (CNSs) but may include Nurse Practitioners (NPs) (masters or doctorally prepared APRNs), who are subject matter experts in their area of specialty that assist to translate best current evidence into clinical practice.

- CNS Spheres of Influence (Patient, Nurse, and System levels)
- Areas of subject matter expertise may include:
 - Medical-Surgical Nursing
 - Critical Care
 - Emergency Department
 - Perioperative Services
 - Maternal-Child Health
 - Pediatrics
 - Neonatal Intensive Care

PCTS Program Manager - responsible for the implementation, management, and sustainment of PCTS components throughout BAMC.

- Collaborates and supports Unit Practice Councils
- Provides educational support upon request
- Provides data-supported Optimized Performance Metrics in Command Management System

Certified Wound, Ostomy and Continence Nurses (CWOCNs) - wound surveillance, staging pressure injuries, treatment, consultation, and ostomy education across inpatient services. 2-4 CWOCNs that are charged to lead a Comprehensive Wound Care Program that functions as

an in-patient consult team, conducts quarterly Prevalence Studies, and wound surveillance.

Research Protocol Coordinator - administrative duties in support of all research and EBP activities.

Services we provide:

1. Research and EBP support and education to unit, facility, and RHC-C
2. Evaluation and consultation regarding impact of research and EBP project implementation on nursing services
3. Mentoring of nurses in research-related activities and evidence-based practice
4. Review of scientific research protocols, abstracts, posters, presentations, and manuscripts
5. Grant, protocol, presentation, and professional writing assistance
6. Research and support to Army Nurse Corps-level Nurse Practice Councils
7. Consultation with nursing subject matter experts and evidence-based practice
8. Annual Evidence-based Practice Course for Leaders

Current CNSCI Research Studies and EBP Projects:

- Influencing the Professional Quality of Life among Nurses in a Military Facility
- Nurse-Led Cognitive Behavioral Therapy (CBT-I) on Service members with PTSD in a Residential Treatment Program
- Intervention to Decrease Perception of Horizontal Violence in Military Nursing
- Impact of Nursing on Readmissions, Failure to Rescue & Mortality in DoD Hospitals
- Microcurrent Therapy for Chronic Low Back Pain: A Randomized Controlled Trial
- Affect Contagion in the ICU: Does It Impact Patient Care?
- A Caregivers of Wounded, Ill, and Injured Service Members: Health and Wellbeing Assessment
- Agent Based Model of Affect Contagion in a Healthcare Work Environment
- Integration of Multidisciplinary Palliative Care Principles within the Critical Care Environment
- Passive Blood Specimen Diversion Device to Reduce Blood Culture Contamination
- Transition in Practice Towards Optimal Performance (TIPTOP) Competency Assessment Program
- Activity and Mobility Promotion Program (AMP), a partnership with Johns Hopkins Hospital to reduce hospital associated injuries/conditions paired with Patient Engagement Program (PEP) to guide motivational conversations
- Patient Experience / Leader Rounding / AIDET
- Interdisciplinary Rounding
- Telesitter – video monitoring system
- Thermal Imaging Device
- Maternal Child Hemorrhage Bundle, Maternal Hypertension, Neonatal Hypoglycemia

Please contact the CNSCI Research Protocol Coordinator for further questions at (210) 916-2482 or email at usarmy.jbsa.medcom-bamc.mbx.bamc-cnscli@mail.mil.

FACT SHEET

BAMC – Zachary and Elizabeth M. Fisher Bone Marrow Transplant Program

MISSION: Our goal is to empower patients and caregivers with high quality information about transplant, so they can make informed healthcare decisions.

BACKGROUND: The BAMC Zachary and Elizabeth M. Fisher Bone Marrow Transplant Program is the sole DoD designated treatment facility for adult allogeneic (related donor, unrelated donor, and cord blood) and one of two DoD facilities providing autologous hematopoietic stem cell transplants. The Program provides a full spectrum of care with state-of-the-science practices and technology to all beneficiaries requiring high-dose chemotherapy in the inpatient and outpatient settings. The Program is accredited by the Foundation for the Accreditation of Cellular Therapies (FACT) which assures optimal care is provided to transplant patients from diagnosis through the recovery phase of their transplant.

HISTORY: The Program was established in 1983 and performed its first allogeneic hematopoietic stem cell transplant in 1986. Since its inception, more than 789 autologous hematopoietic stem cell transplants and 676 allogeneic hematopoietic stem cell transplants have been performed. In 2005, the Program was awarded the FACT accreditation. FACT sets standards that establish minimum performance guidelines for hematopoietic stem cell transplant programs and provides oversight to assure the standards are met.

- The Transplant Program is located in the newly constructed Consolidated Tower (COTO) of the BAMC facility at Fort Sam Houston, Texas. Comprehensive and multidisciplinary care is provided by the Transplant Program in their 21,222 square foot space facility by a team of specially trained personnel and in concert with consultants from San Antonio Military Medical Center facilities.
- The Program has a multi-disciplinary team consisting of a clinical dietician, medical social worker, clinical nurse specialist, transplant coordinator, fellows and residents, nurses, students, and staff physicians. Daily rounds ensure continuity of care.
- The Program is comprised of a 14 private bed inpatient unit; 12 of those rooms have positive pressure air flow and two are negative pressure. There are two nurse's stations to provide convenient and safe access to patient rooms.
- The Program's outpatient clinic offers 24/7 staffing to ensure appropriate support for those patients undergoing outpatient treatment. The clinic is comprised of three examination/isolation rooms, two procedure rooms and eight treatment stations.
- The Transplant Program is in concert with the Hematology/Oncology Program supports the Graduate Medical Education through the Hematology/Oncology Fellowship Program and the Internal Medicine Training Fellowships.

FACT SHEET

USAISR Research Directorate

The U.S. Army Institute of Surgical Research (USAISR) and Brooke Army Medical Center (BAMC) are housed in adjoining buildings. The research facilities consist of two buildings, with a combined total of 269,286 square feet. The research facilities house the USAISR Research Directorate; the U.S. Army Dental and Trauma Research Detachment; the BAMC Department of Clinical Investigation; and the U.S. Air Force En-Route Care and U.S. Navy (NAMRU-San Antonio) research units.

Research at USAISR is coordinated through the Research Directorate, which oversees nine Task Areas totaling approximately 300 personnel: Critical Care Systems, Multi-Organ Support Therapies, Burn Injuries, Systems of Care for Complex Patients, Extremity Trauma and Regenerative Medicine, Coagulation and Blood Research, Damage Control Resuscitation, Tactical Combat Casualty Care (TCCC), and Ocular Trauma. Embedded within Burn Injuries and TCCC, respectively, are the Burn Pain and Battlefield Pain Management research programs. To support these research activities, the Research Directorate maintains a capability for Epidemiology and Biostatistics. The Clinical Trials group is comprised of research nurse coordinators and others with expertise in planning and executing clinical trials. Acute Maxillofacial Trauma research is conducted by the Dental Trauma Research Directorate, an activity of the U.S. Army Dental Command housed within USAISR. The research budget at USAISR is approximately \$30M per year of core funds, variably supplemented with extramural grant awards. The majority of core research funds are programmed in conjunction with the Joint Program Committee – 6 (JPC- 6)/Combat Casualty Care Research Program (CCCRP), Headquarters, Medical Research and Materiel Command, Fort Detrick, Maryland. Identified research priorities are intended to close validated gaps in combat casualty care, generally as tangible products (materiel solutions) or knowledge products. Research proposals are vetted by an internal peer-review process coordinated by the CCCRP.

The Research Directorate has extensive capabilities for, and experience in, the conduct of research associated with: hemorrhagic shock, hemostasis, resuscitation, coagulation and inflammation, burns and inhalation injury, hard- and soft-tissue extremity trauma, regenerative medicine, pain management, craniomaxillofacial trauma, ocular trauma, medical monitoring, and intensive care. USAISR has a central laboratory capable of conducting routine chemistry, blood gas, complete blood counts, hematology, coagulation, microbiology, and histopathology on research samples.

Additional USAISR laboratory capabilities in various laboratories throughout the institute include mRNA and DNA microarray scanning, quantitative real time PCR, flow cytometry, immunophenotypic analysis, mass spectroscopy, high-performance liquid chromatography, and gas chromatography. Further specialized testing may be obtained through collaboration with other clinical departments, including the Departments of Hematology/Oncology and Allergy/Immunology. Laboratory facilities specifically dedicated to research are also available at BAMC. The USAISR also has significant expertise in trauma informatics and waveform analysis. Specific research capabilities available at USAISR include:

- Hypovolemia research using a Lower-Body Negative Pressure (LBNP) chamber
- Blast tube research using compressed air to produce waveforms and pressures similar to a free-

field blast wave with peak pressures up to 400 kPa and about 2.5 ms to 3 ms duration.

- Intra-vital video-microscopy to perform *in vivo* local measurements of diameter, blood flow, permeability and glycocalyx thickness in microvessels (arterioles, capillaries, venules) of anesthetized animals.
- Gene expression and genomic analysis through use of on-site Agilent Microarray equipment including a dual laser microarray scanner and hybridization oven. The equipment can support both traditional gene expression analysis (at the mRNA or microRNA level).
- Flow Cytometry (e.g., platelet, leukocyte and microvesicle studies) using a variety of instruments
- Microbial biofilm formation and susceptibility testing using both commonly employed static models (96-well microtiter plate/modified MBEC susceptibility plates) as well as dynamic models (flow-cells) *in vitro*.
- Anatomic Pathology services, offering full-service autopsy, necropsy, and histopathology services for both clinical and research customers. The histology laboratory contains three tissue processors capable of handling 200 blocks apiece, two microtomes for sectioning tissue samples at 3 to 4 microns, and one automatic stainer that can handle 20 hematoxylin and eosin (H&E) slides in under 20 minutes. Additional available stains include H&E, Gram, Periodic Acid Schiff (PAS), Masson's trichrome, Gömöri-Grocott methenamine silver (GMS), Movat's Pentachrome, Oil-Red- O, and Warthin-Starry.
- Vivarium facility totaling 49,341 square feet, including 7 operating rooms, a 4-bay animal ICU, computed tomography (CT) scanner, C-arm fluoroscopy, ultrasound, micro-CT scanner, and Xenogen IVIS Spectrum Imaging System. The vivarium can support large (pigs, sheep, and goats), medium (rabbits), and small (mice, rats) animal experiments. The USAISR is fully accredited by the Association for the Assessment and Accreditation of Laboratory Animal Care International (AAALAC International).
- Media Informatics/Knowledge Management Branch to manage general research imagery, radiology images, research records/document management and intranet/web development task

For more information, refer to: <https://usaisr.amedd.army.mil>

FACT SHEET

U.S. Army Institute of Surgical Research Burn Center

MISSION: The U.S. Army Institute of Surgical Research (USAISR) Burn Center serves as the sole burn center within the U.S. Department of Defense providing comprehensive care to military casualties, beneficiaries, and civilian emergency patients based on state-of-the-science practices and technology fully integrated with combat casualty care research. The Burn Center has been verified by the American Burn Association and the American College of Surgeons Committee on Trauma as having the resources required for providing optimal care to burn patients from time of injury through the rehabilitation phase.

LOCATION AND OTHER FACILITIES: The Burn Center is located in the San Antonio Military Medical Center at JB San Antonio, Fort Sam Houston, Texas. Comprehensive, multidisciplinary care is provided by Burn Center staff and Burn Flight Team consisting of approximately 300 federal employees and contract staff, in concert with consultants from Brooke Army Medical Center (BAMC) and other facilities. The Burn Center staff is assigned to the USAISR, a subordinate command of the U.S. Army Medical Research and Development Command (USAMRDC) located at Fort Detrick, MD.

HISTORY: Since 2003, the Burn Center has admitted more than 950 combat casualties related to overseas contingency operations along with an additional 5500 patients from the immediate South Texas area. Critical care provided within the Burn Center leverages state-of-the-science best clinical practices coupled with clinical research to ensure optimal care. Ongoing research activities remain focused on combat casualty care and related priorities of the USAISR, including resuscitation, homeostasis, critical care and functional outcomes of the trauma patient.

- The Burn Center includes a 16-bed Burn Intensive Care Unit (BICU) providing care for patients with severe burns, inhalation injury, toxic epidermal necrolysis, necrotizing fasciitis, and other trauma for which the Burn Center team is optimally positioned to care for. Specialized support services include Extracorporeal Organ Support modalities such as Continuous Renal Replacement Therapy and Extracorporeal Lung Support. A dedicated respiratory therapy service consisting of 16 full-time therapists provides comprehensive pulmonary care, utilizing a variety of ventilators and modalities, including high-frequency percussive ventilation.
- A 24-bed progressive care ward provides either initial or extended care for patients admitted from the Emergency Department or clinic or in transfer from the BICU. The burn rehabilitation service consists of physical and occupational therapists and technicians, including staff with added credentials in hand therapy. Our physical medicine and rehabilitation physician works closely with rehabilitation staff to ensure maximal integration of services for all patients.
- The burn operating room team provides 24/7 staffing to ensure dedicated support for burn casualties for both acute and phased reconstructive operations. Three full-time anesthesiologists provide comprehensive anesthesia support in the operating room and throughout the Burn Center, including acute pain management. Our multi-specialty interdisciplinary team enjoys the active participation of our clinical dietician, psychiatric nurse specialist, social workers and nurse case managers, burn program manager, attending surgeons, internists, physician assistants, fellows, residents, students, and multiple clinical research personnel who round

collectively on all patients.

RESEARCH STRATEGY: The clinical research program at the USAISR is dedicated to improving functional survival among military service members and civilians. This effort is executed through the many retrospective and prospective studies, and clinical trials conducted daily by principal investigators and their investigational team. Collaborations between clinical and bench scientists provide rapid, deployable solutions in the form of devices, methodologies and administration of life sustaining patient care.

FACT SHEET

Battlefield Health and Trauma Research Institute (BHT)

MISSION: Optimizing Combat Casualty Care

VISION: The Nation's Premier Tri Service research organization that integrates safety into planning and executing registry-based and translational Research providing innovative solutions for burn, trauma, and combat casualty care from time of injury through rehabilitation.

The Battlefield Health and Trauma (BHT) Research Institute has been operating at Fort Sam Houston, Texas since August 2010 as part of the Department of Defense's (DoD) 2005 Base Realignment and Closure (BRAC). The BHT is composed of the U.S. Army Institute of Surgical Research (ISR), Naval Medical Research Unit (NAMRU) San Antonio and the Air Force Dental Evaluation and Consultation Service (DECS).

Before the collocation of the Tri-service BHT, the Air Force DECS was located at Great Lakes, Ill., and two units (the combat casualty care research sub-function of the Naval Medical Research Center from Forest Glen, Md., and the Naval Institute for Dental and Biochemical Research from Great Lakes, Ill.) joined to create NAMRU San Antonio.

In locating all combat casualty care research activities at Fort Sam Houston, BRAC 2005 recognized that BAMC is the only level 1 Trauma Center within the DoD, the U.S. Army Institute of Surgical Research Burn Center is the only burn center within the DoD, and the Medical Education and Training Campus (METC), where virtually all DoD enlisted medical personnel will be trained.

BRAC is the method that the DoD uses to reorganize its installation infrastructure to more efficiently and effectively support forces, increase operational readiness and facilitate new ways of doing business. The BHT was created to remove redundancy and create a synergy in combat casualty care research.

To accomplish this, a 150,000-square-foot building was constructed adjacent to the existing Institute of Surgical Research facility. Collectively, these two building now make up the BHT.

Collocating the Army, Navy and Air Force in one area has been beneficial to combat casualty care research. Bringing the units together to the same campus has increased the ability to work together and has increased the awareness of each other's research focus. It has led to collaboration on many projects that have saved time and money to create effectiveness.

Combat casualty care research projects that are being worked together include studies of pre-hospital and en-route patient care from the battlefield. Of the many pre-hospital collaborative studies being conducted at the BHT, some of these studies include tourniquets and other devices to stop hemorrhage, automated monitoring and decision support devices for battlefield critical care, burn resuscitation for the combat injured and devices to keep patients warm.

Everything that is being done, is for the combat wounded. The future of combat casualty care is a joint venture to effectively accelerate innovation and provide world class care to combat casualties.

This is intended to foster the rapid application of research findings to health care delivery and provide synergistic opportunities to bring clinical insight into bench research.

FACT SHEET

Center for the Intrepid

MISSION: The threefold mission of the Center for the Intrepid (CFI) is to provide rehabilitation for OIF/OEF casualties who have sustained amputation, burns, or functional limb loss, to provide education to DoD and Department of Veteran's Affairs professionals on cutting edge rehabilitation modalities, and to promote research in the fields of Orthopaedics, prosthetics and physical/occupational rehabilitation. The staff and equipment for the building was selected to provide the full spectrum of amputee rehabilitation as well as the advanced outpatient rehabilitation for burn victims and limb salvage patients with residual functional loss.

Vision: Through the collaboration of a multi-disciplinary team, we will provide state-of-the-art amputee care, assisting our patients as they return to the highest levels of physical, psychological and emotional function.

History: In the spring of 2005, Arnold Fisher and the Intrepid Fallen Heroes board of directors, proffered a rehabilitation facility. Secretary of the Army Harvey accepted the proffer and \$50-million from the Intrepid Fallen Heroes fund; donations raised entirely from over 600,000 generous, Americans. Ground was broken for the four story, 65,000 square foot outpatient rehabilitation facility which includes a clinical space, military performance and gait labs, a computer assisted rehabilitation environment, a pool, indoor running track, a two-story climbing wall, and prosthetic center.

The CFI is a world-class physical rehabilitation facility focused on medical and rehabilitative care of wounded warriors and veterans, injured in service to America, many of whom have suffered limb- loss. Its premier facilities incorporate the best technology and techniques anywhere in the world and are beyond state-of-the-art.

The CFI will provide amputees and those with severe extremity injuries the best opportunity to regain their ability to live and work productively. In addition to serving as a premier rehabilitation center, the CFI is actively involved in clinical research.

Cost: The \$50-million CFI was built entirely from private funds generously donated by more than 600,000 Americans through the Intrepid Fallen Heroes fund.

Ongoing Fundraising: Although sufficient funding has been received for the construction costs, the Intrepid Fallen Heroes Fund is accepting donations to provide additional services to the patients who will be treated in the CFI and their families. These services may include facilities for patients' children, additional medical equipment and supplies, medical research to improve the care of patients, and other areas. One hundred percent of the contributions will continue to go to these services, with nothing taken out for the Fund's administrative costs.

Eligibility: Wounded warriors and veterans who were injured in the current Global War on Terrorism will be the initial beneficiaries of the facility. The CFI serves traumatic amputee patients, burn patients requiring advanced rehabilitation, and service members undergoing limb salvage techniques. Eligible patients are evaluated by a health care team to determine if they have the potential to benefit from the advanced rehabilitation offered, prior to being cared for at the CFI. Access to the facility will be

based upon the space available to provide the care in a safe environment.

Reasons for Construction: To date, more than 23,000 service members have been wounded in operations in Afghanistan and Iraq. Those who suffer injuries so severe that they require extensive medical care, years of treatment and rehabilitation, are medically discharged from the armed forces. Some are treated at San Antonio Military Medical Center, Walter Reed National Military Medical Center. Their future quality of life, their ability to care for themselves and provide for their families, and their very survival depends on the treatment, rehabilitation and advanced training skills they receive following their injury.

Reason the Center was built with Private Funds: The Army currently provides superb medical and rehabilitative care for wounded warriors and will continue to do so. The Army is extremely grateful that a private, non-profit association is partnering with the Army and other Services to provide the best possible venue anywhere in the world for our wounded warriors. These wounded military members, injured in service to America, are top- notch athletes who deserve a facility that is the best in the world.

Medical Direction: The medical care carried out in the CFI is under the direction of the chairman of the Department of Orthopedics and Rehabilitation at Brooke Army Medical Center. Physiatrists work closely with the orthopedic surgeons and other physicians to coordinate all care.

Military Performance Lab: The Military Performance Lab seeks to analyze human motion, with particular emphasis on amputee gait (walking). The information collected in the military performance lab is ultimately used to help physicians, physical therapists, and prosthetics' adjust their treatment plans and improve patient function.

Computer Assisted Rehabilitation Environment (CAREN): Is a 21-foot dome with a 300-degree screen upon which a variety of "virtual realities" may be displayed. This simulator is the first of its kind and holds much promise for the rehabilitation of the patients. The CAREN is central to the research mission of the center.

Gait Lab:

- Up to 24 cameras use infrared light to track the position of reflective markers placed on a patient's body. Joint angles are calculated and analyzed.
- Force plates in the floor, parallel bars and treadmill measure ground reaction forces in three directions. Using these factors, the torque that muscles or prosthetic components are producing can be determined.
- Electromyography (EMG) is used to assess the electrical activity that is given off during muscular contraction. The EMG system can detect both the timing and intensity of muscular contractions.

Occupational Therapy: Occupational Therapy (OT) focuses on restoring health and function following injury or illness. Treatment activities are designed so that patients can successfully perform occupational tasks and Activities of Daily Living (ADL) like bathing, dressing, shopping, cooking, writing, performing household chores and everything needed to function on a day-to-day basis. Therapists and technicians provide:

- Evaluation and treatment for conditions including amputation, fracture, nerve injury and soft tissue injury.
- Activities to regain range of motion, increase muscle strength, decrease pain, and facilitate

their ability to perform functional tasks and to reach their maximum potential and independence.

Activities of Daily Living Apartment: The purpose of the ADL apartment is to provide patients a real-world environment in which to practice every-day skills. OT uses this apartment to evaluate and treat patients ensuring that patients are both physically and/or mentally capable of safely performing specific activities of daily living. The apartment has:

- A computer workstation equipped with state-of-the-art voice recognition software, compact keyboards and a height adjustable desktop
- A fully equipped kitchen and bathroom
- A comfortable living room

Firearms Training Simulator (FATS): This state-of-the-art system simulates the firing of different weapons in a host of settings. Using the system, patients practice different firing techniques and may qualify with weapons systems common to the military.

Community Re-Integration: The OT staff also coordinates a community re- integration program for the amputee patients. This program includes a wide variety of experiences outside the clinic setting. Activities such as horseback riding, paint-ball, archery, kayaking and golf allow the patients to be challenged and have fun at the same time.

Physical Therapy (PT): PT provides evaluation, diagnosis, treatment and rehabilitation for patients who have sustained trauma and/or illness. For the amputee patient, the PT team utilizes multiple interventions focusing on patients' abilities and interests, not their disabilities.

- Amputation awareness and residual limb care while still an inpatient
- Wheelchair mobility and crutchtraining
- Strengthening activities
- Pre-prosthetic training working on dynamic balance, proprioception and endurance
- Residual limb care, fit awareness and gait training on a variety of surfaces
- An adaptive sports program including a multi-phased running program, swimming, snow skiing, water skiing, track and field, basketball, volleyball, fencing, archery, shooting, golf, kayaking and scuba diving.

Specialized Equipment: The third floor has a Treadwall and 21-foot climbing tower with auto-relay to promote strengthening, agility and aerobic conditioning.

In the natatorium there is a six-lane pool for pre-running activities, kayaking, water basketball, volleyball, and general swimming. The Flowrider®, a unique indoor activity is adjacent to the pool and used to improve balance, coordination, strength, motivation, and confidence.

Case Management: A full-time case manager is assigned to each patient in the CFI. These professionals work closely with the patients, their families and the entire CFI staff to:

- Coordinate the development of a customized, multidisciplinary team plan of care
- Monitor the plan of care to report any problems to the appropriate team member(s)
- Seek solutions to improve the delivery of care and patient outcomes

- Identify and assist with all needs of the patient and the family
- Function as the initial point of contact for multiple referrals utilized to augment care at BAMC

Behavioral Medicine: The ultimate goal for the CFI Behavioral Medicine Service is to enable patients to maximize their potential for emotional, mental, spiritual and physical recovery.

- Comprehensive psychiatric support services to amputees and their families from inpatient through convalescence and rehabilitation
- Individual therapy, support group meetings, medication management, family support group, and cognitive assessment
- Treatment facilitation for all behavioral health needs

Prosthetics: The prosthesis's and technicians in the CFI utilize a team approach to provide state-of-the-art onsite fabrication of artificial limbs. Standard production methods are augmented by:

- Computer assisted technology for design, milling, and production of prosthetic devices
- Wireless technology for remote adjustment of upper and lower extremity prostheses
- Design and fabrication of unique specialty limbs for sports and other activities
- High-tech materials in combinations of acrylic resins, carbon fiber composites and titanium

FACT SHEET

NAVAL MEDICAL RESEARCH UNIT (NAMRU) SAN ANTONIO

NAMRU-SA is located on the San Antonio Military Medical Center campus, Joint Base San Antonio-Fort Sam Houston, TX. NAMRU-SA serves as one of the leading research and development laboratories of the U.S. Navy under the DoD and is one of eight subordinate research commands in the global network of laboratories operating under the Naval Medical Research Center (NMRC), Silver Spring, MD.

MISSION: Conduct gap driven combat casualty care, craniofacial, and directed energy research, to improve survival, operational readiness, and safety of Department of Defense personnel engaged in routine and expeditionary operations.

SCOPE OF RESEARCH: NAMRU-SA scientists conduct basic, applied, and advanced technology research and development. Some work has extended into prototype demonstration in an operational environment.

RESEARCH DIRECTORATES

Combat Casualty Care and Operational Medicine

- **Expeditionary and Trauma Medicine Department:** Expeditionary and Trauma Medicine Department conducts research focused on the protection, resuscitation, and stabilization of combat casualties at frontline points of care in the combat theater. The Trauma Medicine Group focuses on primary and pre-clinical research for the development and optimization of drug products and advanced therapies for the treatment of hemorrhagic shock. The Expeditionary Medicine Group works to identify and effectively mitigate stressors, improving survivability through the evaluation of products and agents that deliver capabilities to meet rapidly evolving expeditionary warfare requirements.
- **Cellular and Immune Based Adjuncts for Casualty Care Department:** Cellular and Immune Based Adjuncts for Casualty Care Department conducts research on stem cell and immune based therapeutics intended to improve warfighter outcomes and survival. Stem cell therapeutics focuses on the comparison and assessment of stem cells from different tissue sources, the assessment of protein secretomes or exosomes for preventing and reducing injury from trauma/hemorrhagic shock, and the targeted treatment of severe tissue defects in order to promote tissue repair. Immune based therapeutics explores immunomodulation to prevent and reduce tissue and organ damage resulting from trauma and hemorrhagic shock.
- **Biomedical Systems Engineering and Evaluation Department:** Biomedical Systems Engineering and Evaluation Department applies engineering principles and design concepts to develop and evaluate medical devices, treatments, and diagnostic tools used in military medicine. Core capabilities include advanced trauma mannequin systems and expertise designing human subjects research studies to evaluate design, safety, efficacy, and human factor aspects of medical devices deployed in prehospital medicine. The department also provides broad engineering expertise for a diverse portfolio of projects within the laboratory, including design and prototype development, computational modeling, custom

machining/fabrication, and software development/automation. Recent development efforts include a field-portable sterilization system, an automated electrospinning system used to generate nanofiber scaffolds for wound care, and an imaging system for assessing dental pulp vitality.

- **Directed Energy Department:** The Directed Energy Program, located at the Tri-Service Research Laboratory, develops diagnostic tools to aid first responders/physicians in identification of distinct injury patterns caused by directed energy sources. These data are also used to establish guidelines to ensure that the appropriate care and treatment from directed energy injuries is implemented.

Craniofacial Health and Restorative Medicine

- **Biomaterials and Epidemiology Department:** The Biomaterials and Epidemiology Department conducts research, development, testing, and evaluation of biomaterials used in medicine and dentistry and studies the distribution of oral, dental, and craniomaxillofacial diseases affecting Sailors and Marines. Research is directed toward analyzing trends and identifying risk factors leading to the improvement of diagnosis, treatment, and prevention of craniomaxillofacial and oral injuries and diseases that affect the health and readiness of Sailors and Marines while deployed, ashore, or in garrison.
- **Maxillofacial Injury and Disease Department:** The Maxillofacial Injury and Disease Department conducts research on the pathophysiology, microbiology, immunology, and etiology of medical and dental diseases leading to the development of novel technologies to increase the armamentarium available to clinicians for the treatment of craniomaxillofacial injuries and resistant infections. Current focus areas of research include the development and use of laser-acoustic, nanoparticle, phage, and biomimetic technologies.
- **Environmental Surveillance Department:** As the lead agent for mercury abatement in Navy Dental Treatment Facilities, the Environmental Surveillance Department is responsible for the development and testing of systems and technologies that minimize the environmental impact and occupational hazards of Navy Dentistry. Focus areas include clinical service life evaluation of existing amalgam separator technology, development of a sensor system to monitor amalgam separator function, and modular amalgam separator prototypes based on proven, existing technology which can increase efficiency and reduce disposal costs.

For more information:

Naval Medical Research Unit San Antonio

3650 Chambers Pass, Bldg. 3610, JBSA Fort Sam Houston, Texas 78234

Website: <https://go.usa.gov/xRQHc>

Updated: May 2020

FACT SHEET

Medical Education and Training Campus (METC)

The Medical Education and Training Campus is an extensive state-of-the-art enlisted medical training educational institution for Army, Navy, Air Force and Coast Guard medics, corpsmen, and technicians. METC was created to meet the 2005 Base Realignment and Closure Commission decision to co-locate training at Fort Sam Houston, Texas. METC is the first stop for nearly all entry-level, enlisted medical training and a point of return for most of the advanced enlisted medical training.

METC entered its initial operating capability on June 30, 2010. Its initial training course was radiography specialist. Other courses were phased in throughout the rest of the year and into 2011. METC became fully operational capable on September 15, 2011. Then on August 10, 2014, METC was realigned and entered initial operational capability as part of the Education and Training Directorate (J7) of the newly established Defense Health Agency.

At peak capacity more than 16,500 students are projected to graduate each year, with an average daily student load of approximately 5,500. METC also employs an operating staff and faculty of 1,200. By service, the student breakdown includes approximately 51 percent Army, 32 percent Navy, and 17 percent Air Force. The longest program offered is Navy Biomedical Equipment Maintenance Technician, at 54 weeks; the shortest program offered is Healthcare Administration Specialist, at four weeks. METC offers a total of 49 medical training programs.

METC's footprint covers more than 1.2 million square feet on Fort Sam Houston which includes eleven new facilities being built. These facilities include three student dormitories and five instructional buildings, a dining facility, fitness center, and a Navy and Air Force shared command building.

Consolidating curriculum, classrooms, instructors, and students allows all services to learn from each other and adopt the highest standards like never before.

METC is leading the way in providing our nation's future medics, corpsman, and techs with start-of-the-art learning technologies and advanced modeling and simulation training.

Students train to become:

Aerospace Medical Service Apprentices

Behavioral Health Techs

Biomedical Repair Techs

Cardiopulmonary Techs

Combat Medics

Cytotechnologists

Dental Assistants

Dental Prosthetic Techs

Diagnostic Ultra sonographers

Diet/Nutrition Techs

Electro neurodiagnostic Techs

Hospital Corpsmen

Laboratory Techs

Nuclear Medicine Techs
Occupational Therapy Assistants
Orthopedic Techs
Pharmacy Techs
Physical Therapy Technicians
Radiographers
Respiratory Techs
Surgical Techs
Urology Techs

As the world's largest enlisted medical education campus and largest consolidation of military training in Department of Defense history, medical enlisted personnel will no longer have to wonder what it will be like to work in a joint environment. With this consolidation, METC enjoys the collective experience of all services to train our students to be the world's finest medics, corpsman, and technicians.

For general information: (210) 808-METC (6382) or email at
dha.jbsa.education-trng-dir.mbx.metcinformation@mail.mil.
<https://www.metc.mil/>

FACT SHEET

San Antonio Military Medical Research Leaders Consortium (SAMMRL)

The San Antonio Military Medical Research Leaders Consortium (SAMMRL) was established in October 2019 to provide opportunity for expanded collaboration among DoD stakeholders to identify military-unique capability gaps and apply science and technology, and associated education and training, to produce solutions to address identified needs. Moreover, wherever possible, collaborate to optimize and capitalize on synergies with respect to expertise, personnel, research models, equipment, and other resources.

Purpose: The purpose of this consortium is to facilitate collaborations and share information regarding on-going research, new initiatives and related efforts, and coordinate PAO materials, updates, etc. SAMMRL consortium provides the opportunity for on-going communication to minimize duplication and enhance collaboration by maximizing use of one another's expertise, resources, and capabilities.

This partnership has its roots in the 1993 Base Realignment and Closure (BRAC) that established the Tri-Service Directed Energy Laboratory at Brooks City-Base, Texas. With over ten-years of valuable synergistic research efforts, BRAC 2005 decided to keep these synergies together. BRAC 2005 established the Battlefield Health and Trauma Institute at Fort Sam Houston which combined the combat casualty care and dental and biomedical research of the three services which was the start of another productive and synergetic research entity. Over the past 15 years since BRAC 2005, the teamwork between the services has only increased to include; trauma critical care, clinical and rehabilitative medicine, diagnostics, therapeutics and medical modeling and simulation training. Joint capabilities has enabled this alliance to improve military health and readiness from the battlefield to the market place, and transition scientific findings to the operational environment and patient bedside to best practices.

The SAMMRL consortium is open to all San Antonio regional Department of Defense military medical research laboratories and training organizations. NAMRU-SA, USAISR, the 59th Medical Wing, the 711th Human Performance Wing, San Antonio Uniformed Services Health Education Consortium, Dental Research and Consultation Service, Brooke Army Medical Center-Department of Clinical Investigation, Air Force Consultant in Dental Research are founding members, Uniformed Services University-Southern Region Campus, Medical Education and Training Campus, and the San Antonio Military Health System.

The SAMMRL consortium is amenable to the inclusion of other organizations/agencies based upon mutual agreement among its members. The SAMMRL consortium is also open to invited guests who have similar or complimentary research interests and have unique capabilities that may be of interest to members of the consortium.

This consortium is structured to facilitate coordination and consensus among end users, subject matter experts, and program leads, and enhance alignment of high-quality medical Research & Development (R&D) efforts with end users' mission critical priority needs. SAMMRL can

connect all of the regional military medical research and education centers in the San Antonio area. Through this partnership, the region can seize the opportunity to focus area resources to satisfy medical research, and related educational needs, boost capability and/or capacity in areas that may be resource constrained. Partnering together to develop best practices that will allow the region to maximize all military medical research efforts to improve the quality of research available to students in all programs serviced by the San Antonio Region.

The teaming of military and private sector healthcare, education and research, along with the strong Veterans Affairs (VA), University, and Biotechnology presence, makes San Antonio the nexus for clinical research and development. The City of San Antonio and the San Antonio Military Innovation Director's primary goal is to support the growing military life science ecosystem by facilitating partnerships and innovations that help the military meet their medical mission requirements, and at the same time, create commercialization opportunities for the community. SAMMRL hopes to foster opportunities for local companies and institutions to collaborate with the military on the development of new and innovative technologies for the battlefield and commercial sector.

Goals:

- Develop a strategic communication strategy to inform Defense Health Agency clinical communities that the SAMMRL is poised to meet their research needs;
- Provide touch points between the JBSA Research Enterprise and the clinical communities, and articulate the operational relevance of the research performed in the San Antonio market that will transition and translate to practice;
- Provide increased opportunities to share management and scientific support functions across the Services to reduce costs and drive efficiency;
- Foster the development of common practices for DoD regulatory interactions with the U.S. Food and Drug Administration and drive commercialization of products for military and civilian use.

The SAMMRL Consortium meets on a quarterly basis. These meetings have been very collegial and productive with many ideas and open discussion on the way ahead and how SAMMRL can be mutually beneficial to all. For more information, usaf.jbsa.59-mdw.mbx.59-mdw-st@mail.mil.

FACT SHEET

Special Warfare

Human Performance Support Group (SWHPSG)

The Special Warfare Human Performance Support Group (SWHPSG) was established in 2018 under the Special Warfare Training Wing (SWTW), both of which are headquartered at Joint Base San Antonio-Lackland, Texas. The SWTW selects and trains the Air Force's conventional and special operations ground combat forces to meet the demands of the future battlefield. The candidates are pushed to the limits of human performance, yielding stronger, smarter, more lethal forces capable of solving the nation's most complex military problems.

Hence, the goal of the SWHPSG is to provide students with the tools to optimize performance and prevent injuries during training and throughout their operational careers. The SWHPSG's Human Performance Squadron (HPS) combines research, technology integration, strength and conditioning, performance nutrition, physical and occupational therapy, and operational psychology support. The SWHPSG's Operational Medicine Squadron (OMS) provides sports medicine care, athletic training, preventive and rehabilitative services, and high-risk event coverage.

During special warfare training, candidates work directly with performance dietitians, performance coaches, and other experts to learn key behavior strategies they can employ, such as the importance of proper nutrition fueling strategies, sleep strategies and proper form for exercises, and techniques to improve cognitive performance. During training, wearable sensors on each candidate track physiologic variables, helping cadre and support staff modify training events as needed to better mitigate risk while still meeting training objectives.

Data tracking tools used in these courses are incorporated into the entire special warfare training pipeline. In addition to real time tracking, instructors from follow-on courses have access to candidates' profiles and are able to track historical data to include injuries, training set-backs, health and performance data, cognitive and attribute-based evaluations, and do trend analyses.

The SWHPSG is continually seeking techniques and technologies that support the optimization of students and the mitigation of injury. This includes collaborating with academia, industry, and other military partners. We take pride in our mission, for our Airmen are our greatest asset and their ability to consistently perform at the highest level translates to a ready force, which in turn is prepared to support our nation's security imperatives.

FACT SHEET

South Texas Veterans Health Care System

MISSION: To fulfill President Lincoln's promise "To care for him who shall have borne the battle, and for his widow, and his orphan" by serving and honoring the men and women who are America's veterans.

South Texas Veterans Health Care System (STVHCS) is comprised of two inpatient campuses: the Audie L. Murphy Memorial Veterans Hospital in San Antonio and the Kerrville VA Hospital in Kerrville, Texas. STVHCS serves one of the largest primary service areas in the nation and is part of the VA Heart of Texas Veterans Integrated Service Network (VISN 17), with offices located in Arlington, Texas. South Texas provides health care services for 80,000 unique Veterans.

The Audie L. Murphy Memorial Veterans Hospital (ALMMVH), named after the nation's most decorated World War II hero, is a quaternary care facility, which is affiliated with the University of Texas Health San Antonio (UTHSA). Comprehensive health care is provided through acute medical, surgical, mental health, physical medicine and rehabilitation, geriatric, and primary care services. Comprised of a Spinal Cord Injury Center, a Community Living Center, a Domiciliary, and a Substance Abuse Residential Rehabilitation Treatment Program (SARRTP). ALMMVH provides quaternary services including bone marrow transplantation, open-heart surgery, magnetic resonance imaging and positron emission tomography. As a Level II Research facility ALMMVH has projects that include aging, cardiac surgery, cancer, diabetes and HIV. The facility has one of three National Institutes of Health sponsored clinical research centers in the VA. In addition, the Geriatric Research, Education & Clinical Center (GRECC) is a "Center of Excellence."

The Kerrville VA Hospital (KVAH), located 65 miles northwest of San Antonio, provides primary care, some specialty care, geriatric evaluation and management, palliative care, and long-term care services with a Community Living Center. Outpatient clinics offer primary care and some specialty care while sharing resources with each other and their respective communities. When required, Veterans are referred to ALMMVH or KVAH for specialty care including medicine, surgery, neuropsychiatry, rehabilitation, spinal cord injury, and long-term care services.

The STVHCS Geriatric Research, Education and Clinical Center (GRECC) has an active research program devoted to developing newer and better ways to improve the health and quality-of-life of older Veterans. Our research is focused on gaining a better understanding of the basic mechanisms of aging, as well as the pathophysiology of metabolic and inflammatory conditions that affect the lives of millions of aging Veterans.

The Office of the Associate Chief of Staff for Research and Development is available to assist investigators in formulating and executing research projects. This office assists in the preparation, review, and submission of VA research proposals and provides liaison between the investigator, the R&D Committee and its subcommittees, and VA Central Office. Additional research facilities include statistical and sample size assistance, veterinary medical unit, imaging system for intracellular studies, and common resource core equipment for research laboratory investigators.

For more information, visit <http://www.southtexas.va.gov/about/index.asp>.

FACT SHEET

Uniformed Services University of the Health Sciences - Southern Region Campus

MISSION: The mission of the Uniformed Services University of the Health Sciences is to educate, train and prepare uniformed services health professionals, officers and leaders to directly support the Military Health System, the National Security and the readiness of our Armed Forces.

PURPOSE: The USUHS Southern Region Campus is located at 2787 Winfield Scott Road, Bldg 2398, Joint Base San Antonio, Fort Sam Houston, TX 78234. It houses the College of Allied Health Sciences and the Postgraduate Dental College.

COLLEGE OF ALLIED HEALTH SCIENCES (CAHS):

The College of Allied Health Sciences was established in 2017 to grant degrees to qualified students of the Medical Education & Training Campus (METC). METC awards medical technician certificates to enlisted personnel; these classes count as the elective credits required for a CAHS degree. General education credits are received in two ways: converting military training to academic credit, and transferring credits from other accredited universities. The role of CAHS is to collect information about all the credits students have earned at other universities, convert relevant military training to college credit, and incorporate METC training to grant accredited degrees to enlisted personnel. CAHS does not itself teach any classes. Only students enrolled in METC are eligible to apply to CAHS, and currently only a few programs at METC are eligible. CAHS is currently only offering an Associate of Science. A Bachelor of Science will be offered in the future.

POSTGRADUATE DENTAL COLLEGE:

The Army, Navy, and Air Force Postgraduate Dental Schools form USU's Postgraduate Dental College. Under the leadership of the deans, department chairs, and program directors, instruction in Master of Science in Oral Biology degree granting residencies is provided at seven locations, in 19 programs, comprising seven different disciplines of dentistry. While each location is unique, they all combine education, research, and dynamic residency opportunities to cultivate excellent clinicians ready to serve a mobile force-at home and abroad, in war and peace. The Air Force Postgraduate Dental School also includes ten Advanced Education in General Dentistry, 1-year certificate programs.

FACT SHEET

Southwest Research Institute (SwRI)

Southwest Research Institute is an independent and impartial nonprofit that performs applied contract research and development for government and industry clients. We offer more than 2 million square feet of laboratories, offices, and test facilities at a 1200-acre campus in San Antonio, Texas. We support work on nearly 4,000 client projects at any given time through a wide range of technical competencies with approximately 3,000 staff members in nine technical divisions.

Southwest Research Institute offers multidisciplinary, problem-solving services in a variety of areas in engineering and the physical sciences, including Automotive & Transportation, Biomedical & Health, Chemistry & Materials, Defense & Security, Earth & Space, Electronics & Automation, Energy & Environment, and Manufacturing & Construction. SwRI has gained worldwide attention by leading NASA missions such as the New Horizons mission to Pluto, Juno mission to Jupiter, Magnetospheric Multiscale (MMS) mission, and the Interstellar Boundary Explorer (IBEX).

Thomas Baker Slick, Jr. an adventurer, philanthropist, and oilman – founded SwRI on a South Texas ranch in 1947. After recruiting talent across the nation, he challenged his team of scientists and engineers to seek revolutionary advancements through advanced science and applied technology. That spirit lives on today. SwRI endures as one of the oldest, independent nonprofit organizations in the United States, providing innovative science, technology, and engineering services to government and commercial clients around the world.

<https://www.swri.org/content/client-services>

FACT SHEET

Texas Biomedical Research Institute (Texas Biomed)

Mission: Texas Biomed is pioneering and sharing scientific breakthroughs that protect you, your families and the global community from the threat of infectious diseases.

Vision: Texas Biomed will be the unrivaled leader in infectious disease research, paving the way to a healthier world, where everyone lives free from the fear and effects of infection.

History: The Texas Biomedical Research Institute began as the scientific dream of its founder, Thomas Baker Slick Jr. A businessman, inventor, oilman, rancher, engineer, philanthropist, peacemaker and adventurer, Tom Slick might best be described as a visionary. Motivated by the philosophy that the welfare of mankind could best be advanced through scientific endeavor, he dared to imagine a “city of science” in South Texas that could be a “great center for human progress through scientific research.” At the time many people believed his grand ideas were impractical, but on December 16, 1941, when he was only 25, Tom Slick, Jr. established the Foundation of Applied Research (FAR) by a trust indenture. Endowed with 1,875 shares of the Slick-Urschel Oil Company, FAR’s mission was to provide fundamental research and advanced education, covering agricultural research, the natural sciences and medicine. FAR’s name was changed in 1952 to the Southwest Foundation for Research and Education, succeeded by the Southwest Foundation for Biomedical Research in 1984. In 2011, the name was changed to Texas Biomedical Research Institute.

Saving Lives with the Power of Scientific Discovery: Texas Biomedical Research Institute aims to unravel the mysteries of infectious diseases through innovative thinking, creative problem solving and cutting-edge technologies. Since its founding, Texas Biomed has gained worldwide recognition for the quality of its basic research and has thrived by staying ahead of the ever-changing bioscience landscape, making today’s discoveries possible of becoming tomorrow’s cures.

By the year 2050, infectious diseases are projected to become the leading cause of death worldwide. By bringing together the best minds with exceptional, unique resources, Texas Biomed is pioneering a new approach to research that is accelerating the development of diagnostics, therapies and vaccines.

Extraordinary Resources:

Texas Biomed is the only research center in the world housing both the highest level of biocontainment laboratories and a national primate research center in on place.

Biosafety Level 4 Laboratory

Developing vaccines and therapies to successfully treat some of the world’s deadliest diseases for which there are no known treatments or vaccines requires the safest laboratory in the world in which to study them. Texas Biomed is home to the nation’s only privately-owned biosafety level four (BSL-4) maximum containment laboratory and operates a 7,500 sq. ft. biosafety level 3 laboratory for the facilitation of studies in COVID-19, tuberculosis, Ebola virus, Marburg virus, and more. The BSL4 facility –which has proven especially beneficial in support of the nation’s

biodefense efforts allows Institute scientists to safely study pathogens for which there currently is no known treatment or vaccine. Texas Biomed is home to one of only nine such labs in North America. All of this science is highly regulated and operates under the strictest ethical and regulatory standards.

Southwest National Primate Research Center

Because of Texas Biomed's extraordinary primate resources and its distinguished history in the humane and appropriate use of animals in research, the National Institutes of Health awarded funding in 1999 for it to establish the Southwest National Primate Research Center (SNPRC), one of only seven National Institutes of Health (NIH) National Primate Research Centers – a network of dedicated teams improving human health worldwide.

The mission of SNPRC is to improve the health of our global community through innovative biomedical research with nonhuman primates. Because of their close similarity to humans in genetics and physiology, nonhuman primates fulfill a unique and critical role in efforts to understand human health and disease. By studying these animals in a controlled environment, scientists can develop a better understanding of the biological processes that underlie and contribute to disease. This information is then used to develop new, more effective ways to prevent and treat disease for the benefit of both humans and animals

High containment laboratories, a National Primate Research Center, molecular services and biology cores, exceptional talent in a nimble, creative environment aimed to move science from discovery to patient care in one place – We are Texas Biomed!

Please visit the Institute's website at www.txbiomed.org.

FACT SHEET

UT Health SA

The University of Texas Health Science Center at San Antonio, now called UT Health San Antonio mission, is to make lives better through excellence in education, research, health care and community engagement. Strategies for achieving this mission are: Educating a diverse student body to become excellent health care providers and scientists. Engaging in research to understand health and disease. Commercializing discoveries, as appropriate, to benefit the public. Providing compassionate and culturally proficient health care. Engaging our community to improve health. Influencing thoughtful advances in health policy.

UT Health is a dynamic and rapidly expanding health science center with five professional schools (medicine, nursing, dentistry, health professions and graduate school of biomedical sciences) with missions of education, clinical care, research, and community service. With a budget of nearly one billion dollars, a work force of 7,100 and a research portfolio of approximately \$300 million, UT Health is quickly rising in prominence among academic medical centers in the United States.

Educating the next generation of health care professionals with five schools, nearly 70-degree specialties, pre- and post-baccalaureate certificate programs. UT Health San Antonio prepares its health care professionals to serve South Texas and the world.

The UT Health Science Center San Antonio is part of a multi-university collaboration to offer a Ph.D. in translational science - a field that melds basic and clinical research that can then be translated into practical patient care. We partner with the UT Health Science Center Houston School of Public Health to offer a dual-degree M.D. and Master of Public Health for our medical school students.

UT Health San Antonio is the premier academic research center of the seventh largest city in the country. The interdisciplinary basic and clinical research across the institution's five schools (Medicine, Dentistry, Nursing, Health Professions, and Graduate) is the chief catalyst of the \$40.2 billion health care and biosciences sector of the city.

UT Health San Antonio's scientists and clinicians engage in research to understand health and disease and to enhance scientific knowledge that will impact society today and tomorrow. Research Areas include: Cancer, Cardiovascular, Diabetes & Kidney Disease, Infectious Diseases, Longevity & Aging, Military Health, Neuroscience, and Regenerative medicine.

For more information visit: <https://www.uthscsa.edu/>.

The Military Health Institute

The Military Health Institute (MHI) was established in 2014 to expand the existing collaborations between UT Health San Antonio and the Department of Defense (DoD) and the Department of Veterans Affairs (VA). The Institute is endowed by the USAA Patty and Joe Robles, Jr. Endowment in Military Health.

Mission of Collaboration

Strengthening the military health activities of UT Health San Antonio to improve the lives of our military service members, veterans, and their families.

Innovative Research

UT Health San Antonio is proud to have a long history of collaborative research with the Department of Defense, and the Military Health Institute aims to continue that tradition. UT Health San Antonio is ground zero for advancements in military health. Our team serves as a conduit for military-civilian information exchange, helping implement lessons from the battlefield to the civilian setting as well as get medical innovations into the hands of service members.

Advocacy and Engagement

Clinical Advocacy: MHI is dedicated to advancing the health and well-being of our military and civilian families through innovations that have a direct clinical impact. In particular, the MHI promotes the UT Health San Antonio strengths most closely aligned to DOD and VA priorities, such as:

- Behavioral Health: Post-traumatic stress disorder (PTSD), pain, and substance abuse disorders
- Trauma: Traumatic brain injury, burns, hemorrhage control
- Cancer: Liver, breast, prostate, and others

Community Engagement: MHI believe it is important to engage with local community members. In addition to working with many local military and veteran support organizations, the MHI has a Community Advisory Council.

Education

MHI sponsors a variety of activities for students, faculty, and the community to learn more about military health.

Grand Rounds and Leadership Talks: The MHI participates in several leadership talks and grand rounds presentations throughout the year.

Military Health Interest Group (MHIG): The MHIG is a student-led activity that welcomes the participation of students from all five of the University's professional schools. With the support of the MHI, the group meets regularly as a forum for learning about careers in military health and seeks to educate members about military medicine.

MHI Postdoctoral Fellowship: The MHI Fellowship in Military Health supports a post-doctoral scholar in their pursuit of improving the health of service members, veterans, and their families. The fellowship is competitive and selected bi-annually.

Distinguished Lecture Series: MHI hosts a series of Distinguished Lectures in Military Health. MHI Faculty Associates: In addition to the research grant proposal development support provided through our Faculty Associate program, there is also a component of military competency education that associates provide to UT Health San Antonio faculty and staff.

For more information, visit: <https://militaryhealthinstitute.org/>.

STRONG STAR and the Consortium to Alleviate PTSD

Leading the charge to defeat combat-PTSD and related problems affecting our war fighters

The STRONG STAR Consortium and the Consortium to Alleviate PTSD (CAP) are partnering, federally funded, multi-institutional research groups working to develop and evaluate the most effective early interventions possible for the detection, prevention, diagnosis, and treatment of combat-related posttraumatic stress disorder (PTSD) and related conditions in active duty military personnel and recently discharged veterans. Under the leadership of The University of Texas Health Science Center at San Antonio (UT Health San Antonio) and based in South/Central Texas, they bring together the expertise of a world-class team of military, civilian and VA institutions and investigators and one of the largest populations of post-9/11 military service members and veterans in the nation. With the critical mass of talent required to make major scientific advances in combat-related PTSD research, STRONG STAR and CAP investigators hope to improve countless lives by preventing the development of chronic PTSD and related problems in a new generation of veterans.

For more information, visit www.STRONGSTAR.org and www.ConsortiumToAlleviatePTSD.org.

Key Facts:

- STRONG STAR is an acronym for the South Texas Research Organizational Network Guiding Studies on Trauma and Resilience.
- The original STRONG STAR Multidisciplinary PTSD Research Consortium was established in 2008 with leadership by The University of Texas Health Science Center at San Antonio (UT Health San Antonio) and funding from the U.S. Department of Defense to conduct 16 specified studies.
- Since its original funding, the STRONG STAR Consortium has added over 20 affiliated projects to its research repertoire, each with separate funding from a variety of federal and private sources.
- In 2013, in response to a National Research Action Plan called for by President Obama, the Departments of Defense and Veterans Affairs jointly funded and established the Consortium to Alleviate PTSD (CAP) under the leadership of UT Health San Antonio and the VA's National Center for PTSD. The CAP is building on STRONG STAR success and capitalizing on its established research infrastructure to launch another dozen studies on PTSD and related conditions, with a particular focus on the detection of biomarkers to aid in diagnosis, prevention, and successful treatment.
- Together, STRONG STAR and the CAP form the world's largest research group focused on combat PTSD and related conditions, with more than 150 collaborating investigators from over 40 military, VA, and civilian institutions.
- The consortia's nearly 50 research projects include randomized clinical trials on the treatment of PTSD and related conditions as well as a variety of epidemiological, biological, preclinical,

prevention, observation, and training studies and initiatives.

- STRONG STAR and CAP are the largest PTSD research groups working in military settings to have successfully conducted multiple, large-scale randomized clinical trials with active duty military populations.
- Treatment studies take the leading and most promising new treatments for PTSD, tailor them to the unique needs of active military and combat veterans, and evaluate them for efficacy with these populations, as well as for their feasibility in military and VA settings.
- Based on a vast array of military-relevant studies, forthcoming findings from STRONG STAR and CAP research are set to inform and influence national policy on the care and treatment of psychologically wounded war fighters for years to come.

Want to learn more about our open treatment studies? Visit www.strongstar.org/treatment.

FACT SHEET

The University of Texas at San Antonio (UTSA)

MISSION: The University of Texas at San Antonio (UTSA) is dedicated to the advancement of knowledge through research and discovery, teaching and learning, community engagement and public service. As an institution of access to excellence, UTSA embraces multicultural traditions and serves as a center for intellectual and creative resources as well as a catalyst for socioeconomic development and the commercialization of intellectual property – for Texas, the nation and the world.

VISION: To be a premier public research university, providing access to educational excellence and preparing citizen leaders for the global environment.

CORE VALUES: UTSA encourages an environment of dialogue and discovery, where integrity, excellence, inclusiveness, respect, collaboration and innovation are fostered. UTSA's core values reflect how we have pursued our plan as well as how we will fulfill our mission and realize our vision.

ACADEMICS: The university offers more than 157 degree programs through its College of Architecture, Construction and Planning; College of Business; College of Education and Human Development; College of Engineering; College of Liberal and Fine Arts; College of Health, Community, and Policy and College of Sciences; as well as the Honors College, University College and The Graduate School.

RESEARCH: UTSA students and faculty conduct advanced research in many cross-disciplinary areas of study. Identified areas of excellence include Cloud, Cyber, Computing & Analytics, Advanced Materials, Integrated Biomedicine, Social & Educational Transformation, and Sustainable Communities & Critical Infrastructure.

The Office of the Vice President for Research, Economic Development, and Knowledge Enterprise promotes all aspects of research and other creative endeavors among colleges, centers, institutes and collaborating partners. The Office ensures that all research-engaged faculty and students have the resources and support they need to develop and manage their research programs.

With research partnerships that include other universities, corporations, government, and the military, UTSA is poised to become a premier research university and to play a major role in the advancement of biomedicine, manufacturing, natural resources conservation, cyber security, primary and secondary education, and other arenas that impact lives.

Learn more at utsa.edu or at facebook.com/utsa, twitter.com/utsa or instagram.com/utsa

FACT SHEET

San Antonio Military Health System (SAMHS), Universities Research Forum (SURF)

The San Antonio Military Health System (SAMHS), the University of Texas at San Antonio and the University of Texas Health San Antonio host an annual SAMHS and Universities Research Forum (SURF). This forum promotes advancing research collaborations among academia, military, and industry to improve health outcomes and readiness. SURF highlights the latest research and discoveries of trainees, faculty, staff, and students working to improve health outcomes and readiness.

SURF participants have the opportunity to present and share innovations in research, practice, and policy; and connect with scholars and practitioners for future education, earn continuing education credits, research, policy, and practice collaborations. The event includes keynote speakers, specialized symposia, podium, and poster presentations. Representatives from biotechnology institutions, industry and city government also participate in SURF. The goal of SURF is to advance research collaborations among academia, industry and military to improve health outcomes and readiness.

SURF themes for podium and poster presentations include: Auditory & Vestibular Health; Caregiver Support; Dental Health & Dental Microbiology; Directed Energy; Health Services Research; Mass Casualty Care; Mental Health & Suicide Prevention; Pain Management; Precision & Regenerative Medicine; Trauma-Related Preventable Death; Wellness, Readiness, & Performance; and Virology & Vaccines. Continuing Education credit (Dental, Medical & Nursing) is available to all participants, resulting in significant annual savings to the DoD.

For more information: <http://research.utsa.edu/surf/>.

FACT SHEET

Academic Network of Conversational Hip Outcomes Research (ANCHOR)

The ANCHOR study group is administered at Washington University. This study group is focused on improving the diagnosis and treatment of adolescent and young adult patients with pre-arthritis hip disease (femoroacetabular impingement and dysplasia). The study group currently includes 29 surgeons at 18 institutions. Investigators collect prospective multi-center data on hip preservation procedures including outcome measures of hip function, hip pain, quality of life, overall health, high-level activity, and economic value.

Data collected is imagined to lead to improved patient care as well as a foundation for future, more sophisticated clinical outcomes studies. The ANCHOR group is committed to high-level clinical outcomes research, and encompasses an outstanding collection of dedicated surgeons and clinical researchers. The ANCHOR study group shares the vision of improving care for patients afflicted with pre-arthritis hip disease. The following publication is by an ANCHOR surgeon attached to the San Antonio Military Medical Center (SAMMC):

Schmitz, Matthew R., Murtha, Andrew S., The ANCHOR Study Group, Clohisy, John C: Developmental Dysplasia of the Hip in Adolescents and Young Adults. Journal of the American Academy of Orthopaedic Surgeons: 2019; doi: 10.5435/JAAOS-D-18-00533; July 22, 2019

Anchor Orthopedics have developed a minimally invasive, easy-to-use Tissue Approximation Kit for use in herniated disc repair procedures. The group, envisions products that help surgeons preserve and strengthen the natural anatomy of patients. Guided by this vision, they design, develop and manufacture surgical devices through an iterative design process. Engineers work closely with surgeons to develop solutions that address unmet clinical needs.

Anchor Orthopedics aims to provide surgeons with novel solutions that optimize procedures in disc repair in an effort to preserve the biomechanics of the patient. Anchor Orthopedics' mission is to work closely with surgeons on all aspects of development to create superior clinical solutions that serve to improve the lives of patients around the world.

Extensive scientific and usability research studies has been conducted to optimize the design and surgical techniques for all of our clinical solutions. ANCHOR facilities are located throughout the United States and Canada. For more information visit <https://anchorhipsurgeons.com>.

FACT SHEET

BioMedSA

BioMedSA is a non-profit 501(c) (3) organization dedicated to the healthcare and bioscience sector in the San Antonio region. It is funded by its members and the City of San Antonio. BioMedSA has established communications, events and programs to support the existing life science companies and organizations in the San Antonio region and market the City of Science and Health to attract talent, funding, and corporate relocations.

San Antonio's life science sector contributes over \$42B to the local economy and is responsible for the employment of nearly 1 out of every 5 workers. The US Patent Office published 175 life science patents from San Antonio inventors in 2019. The city organizations and population support over 1400 clinical trials per year. Research organizations received over \$530 million in federal research grants in 2019. Clearly, San Antonio has a vibrant healthcare and bioscience sector to facilitate additional growth.

MISSION: To accelerate growth of the healthcare and bioscience sector, create regional economic benefit, and contribute to the health of San Antonio and beyond by establishing San Antonio as a leader in healthcare and bioscience.

HISTORY:

BioMedSA was formed by San Antonio community and industry leaders in 2005 to build upon the city's impressive base of biomedical assets and raise its visibility nationally and beyond. This initiative was based on the realization that, despite the significant size of the local healthcare and bioscience industry and its importance to the local economy, San Antonio is not well recognized for its unique biomedical assets. The City of San Antonio, Bexar County and CPS Energy provided grants totaling \$250,000 to launch BioMedSA as a non-profit corporation and public/private partnership. This was done at the request of Henry Cisneros and Joe Krier, representing The Greater San Antonio Chamber of Commerce.

STRATEGIES:

- Serves as neutral convener of targeted working groups and collaboration events
- Facilitates collaborations and connections
- Communicates and hosts funding opportunities / events
- Communicates local industry events and news
- Advocates for the life science sector in San Antonio
- Posts a job board for the life science sector
- Provides how-to information for the life science sector
- Promotes San Antonio as a city of science and health
- Works with the City and SAEDF by providing industry input used to optimize city workforce initiatives and company recruitment projects

For more information: <https://biomedsa.org/>

FACT SHEET

San Antonio Economic Development Foundation (SAEDF)

The San Antonio Economic Development Foundation (SAEDF) is a private, nonprofit organization that leads the development and diversification of the San Antonio regional economy through the location and expansion of quality employers and job producing investments. We exist to drive San Antonio's economic growth and diversification through recruiting new business to San Antonio, helping our local companies stay and grow, and bridging the gap between education and industry to build a sustainable workforce pipeline for the community. SAEDF is supported by its partners (City of San Antonio, Bexar County, CPS Energy, SAWS) and more than 165 private sector investors. Since 1975, SAEDF has assisted over 450 companies with their location and/or expansion plans, creating more than 110,000 jobs for San Antonians.

The SAEDF's goal is to attract and maintain the presence of thriving businesses in San Antonio. The products and services that companies provide and the jobs the company creates have a lasting impact on our culture and economy. When your organization excels, so does our economy- and in turn our community. Through the Business Retention and Expansion (BRE) program, it is our objective to provide you and your business the resources necessary to grow and prosper in San Antonio.

SAEDF leverages a wide range of resources and puts them at your fingertips. Together with our BRE Team (CPS Energy, SAWS, the City of San Antonio, Bexar County, workforce agencies and others), we address a multitude of challenges and find ways to help your company flourish by discovering solutions and opportunities. For years, we have used this technique to help local firms address a wide range of challenges and opportunities- including facility expansion, site selection, infrastructure assistance, access to qualified job applicants, and more.

HISTORY:

San Antonio is now the 7th largest city in America. The origins of San Antonio's commerce dates back to its history as a trading post and settlement of its five Spanish missions that are now designated a World Heritage site. As we celebrate our city's 300th Anniversary, San Antonio's economy over the years has evolved into a stable, diverse economy through its evolving industry sectors: advanced manufacturing, bioscience, financial services, logistics/distribution, new energy, IT/cybersecurity, military/defense. Leading companies such as USAA, NuStar Energy, Toyota Motor Manufacturing Texas, Valero Energy, HoltCat, Tesoro, Zachry, Frost, Rackspace, Medtronic, H-E-B and many others successfully operate in San Antonio. Since the establishment of the SAEDF over 40 years ago, San Antonio has seen a period of dramatic and diverse industry growth.

San Antonio builds upon its rich history and today is a center of activity and growth, attracting companies and young professionals defining an era of limitless opportunity.

For more information: <http://www.sanantonioedf.com/>.

FACT SHEET

San Antonio Economic Development Corporation (SAEDC)

The San Antonio Economic Development Corporation (SAEDC) is a 501(c)(3) non-profit whose mission is to focus on creating jobs and promoting long term economic growth specific to the San Antonio regional business ecosystem. The SAEDC seeks to help grow current businesses, create new start-up companies, and attract new business to the area.

In 2017, the City formed a Military Life Science Research Working Group (link below) to focus on how the community could partner better with the military to help them meet their medical mission requirements and leverage military medical research to create community commercialization opportunities. A subsequent consultant study resulted in the San Antonio Military Life Science Commercialization Action Plan (see link below). In September 2018, the San Antonio Economic Development Corporation (SAEDC) initiated Phase I implementation of the Action Plan which included the development of the San Antonio Military Life Science Commercialization Charter (link below) outlining the pathway forward for execution of the Action Plan.

- [San Antonio Military Life Science Commercialization Action Plan](#) (PDF)
- [San Antonio Military Life Science Commercialization Charter](#) (PDF)

Phase II implementation of the Action Plan includes the establishment of a full-time San Antonio Military Medical Innovation (SAMMI) position to facilitate implementation of the Charter and coordinate the development of a local Alliance to provide long-term sustainability and funding.

The SAEDC established the San Antonio Military Medical Innovation Fund in 2019 to promote local economic development by providing financial assistance to early-stage local companies engaged in the development of products and technologies that support military medical requirements, as well as having the potential for broader civilian markets.

For more information: <http://www.saedc.org/>, <https://www.sanantonio.gov/EDD/Military-Life-Science-Commercialization> and <https://www.sanantonio.gov/EDD/SAMMIFund>

FACT SHEET

San Antonio Medical Foundation

The San Antonio Medical Foundation (SAMF), Founders and Directors of the South Texas Medical Center, was formed in 1947 as a 501 (c) (3) Public Charity. The initial goals were to bring a medical school to San Antonio and add hospitals. The Mission of the SAMF is to ‘Provide leadership and active stewardship of our land and other assets to improve health care, advance biomedical science and enhance community well-being’. The SAMF serves as a catalyst for the San Antonio and South Texas health care and bioscience industry.

The organization is governed by a 33 member Board comprised of local business, civic and professional leaders. The Foundation has acquired over 600 acres since the 1950’s in what is now the South Texas Medical Center, and has given over 180 acres to the University of Texas Health Science Center at San Antonio. Other primarily not-for-profit health care and related entities have had another 150 plus acres made available to them. The Foundation holds an additional approximately 220 acres for entities that will enhance the medical center. In addition, the Foundation has recently entered into programs addressing youth obesity and corporate wellness as a community service.

For more information visit: <https://www.samedfoundation.org/>.

San Antonio Bioscience Research

San Antonio is a dynamic hub of cutting-edge bioscience research and innovation. Here, researchers are targeting new breakthrough discoveries and treatments for some of the most complex medical challenges facing the world today. To gather and grasp the totality of the current research activity in San Antonio would require a concerted investment of time, expertise and dedication. That is precisely the purpose of the Bioscience Research Database: to create a single, transparent source for the collection of pertinent, real-time information from the many bioscience research projects in San Antonio’s universities, institutions, military research programs and companies, and make that data readily available and accessible to a variety of audiences:

- Anyone interested in understanding the breadth and depth of bioscience research in San Antonio
- Scientists and researchers from around the nation and the world who are seeking collaborative research opportunities
- San Antonio-based scientists and researchers looking to connect and collaborate with other local research organizations
- Researchers and technicians looking to join a San Antonio-area bioscience research organization

A project coordinated by the San Antonio Medical Foundation, the San Antonio Bioscience Research Database is the first of its kind in the nation and another example of the innovative spirit embedded in the DNA of this city’s dedicated research community. Our collective goal is to collaborate, share and assist in increasing the efficacy of bioscience research for the betterment of mankind. For more information, visit <https://sabioscience.org/>.

FACT SHEET

JOINT BASE SAN ANTONIO OPERATION WARP SPEED PHASE III CLINICAL TRIAL

A kick-off event to commemorate the San Antonio Military Health System beginning Phase 3 of the AstraZeneca vaccine trial as part of the Department of Defense (DoD) Operation Warp Speed was held November 18, 2020, at Brooke Army Medical Center, Joint Base San Antonio-Fort Sam Houston, Texas.

The 59th Medical Wing, Wilford Hall Ambulatory Surgical Center (WHASC), and Brooke Army Medical Center (BAMC) at the San Antonio Military Health System, Joint Base San Antonio, Texas, are two of the five locations selected to participate in the Department of Defense's first COVID-19 vaccine trial. Site locations were chosen based on their diverse and representative military beneficiary population and their geographic location of being in an area highly affected by COVID-19.

The DoD has a goal to recruit 1,000 volunteer participants in each Market area (500 WHASC/ 500 BAMC); the target population is Active Duty, Reserve and National Guard, Retirees, Veterans, and other Military Health System beneficiaries who meet the trial parameters.

Partnership among components of the Department of Health and Human Services (HHS) (including the Centers for Disease Control and Prevention, the Food and Drug Administration, the National Institutes of Health, and the Biomedical Advanced Research and Development Authority), and DoD was established to efficiently and effectively conduct Phase III trials.

The goal is to deliver 300 million doses of safe, effective COVID-19 vaccine by January 2021; DoD was asked to provide study sites to augment the National Institute of Allergy and Infectious Diseases and Contract Research Organization (CRO) sites.

On May 21, 2020, HHS announced up to \$1.2 billion in support for AstraZeneca's candidate vaccine, developed in conjunction with the University of Oxford.

Key Points:

Coronaviruses are respiratory viruses and most often cause common-cold like symptoms every winter. This virus (SARS-CoV-2) causes the illness that is now called COVID-19. People with COVID-19 may have symptoms ranging from mild symptoms or severe illness, even death. Older adults and people with medical conditions like heart or lung disease or diabetes seem to be at higher risk for developing complications from COVID-19 illness.

The AstraZeneca Vaccine Clinical Trial was on hold in the U.S. due to a serious adverse reaction in a participant who received the vaccine; the study was cleared to resume in Europe and other locations around the world, but remained on hold in the U.S., pending FDA review. The review was completed and on 23 October and the trial was deemed safe to resume in the U.S.

A central commercial Institutional Review Board (Western IRB) and Institutional Biosafety Committee (required for recombinant vaccines) are being used to ensure safe administration of the vaccine during the trial.

The AZD1222 COVID-19 VACCINE team is currently enrolling healthy adults to participate in a research study for a vaccine to prevent COVID-19, the disease caused by the new coronavirus (SARS-CoV-2). Participants will be randomly assigned (by chance) to receive 2 injections of either the investigational vaccine or placebo.

Target population at DoD sites, to include BAMC and WHASC are adults (18 yrs. and over) with primary focus on retired Military Health System beneficiaries - active duty, retirees and family members.

If you take part, you will be in the study for approximately 2 years and will require up to 10 visits to our study center. The study injections, health assessments, and medical tests related to the study will be provided at no cost to participants.

Beneficiaries are welcome to sign up for consideration now by reaching out to either site or alternatively, by visiting www.CoronavirusPreventionNetwork.org; click on “Volunteer Now” and complete the survey. NOTE: As of this publication date, participant enrollment has ended.

The primary endpoint is prevention of confirmed clinical COVID-19 disease; secondary endpoints include prevention of acquiring infection.

References:

1. <https://www.defense.gov/>
2. <https://www.expressnews.com/news/local/article/San-Antonio-s-military-hospitals-volunteers-to-15737259.php>
3. <https://www.kens5.com/article/news/local/the-next-phase-of-operation-warp-speed-kicks-off-in-san-antonio/273-911ee984-58ce-4ff7-ac0b-2b05cb8cd9b6>
4. <https://news4sanantonio.com/news/local/bamc-wilford-hall-selected-to-participate-in-operation-warp-speed-covid-19-vaccine-trial>



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